Menards 32-page fall catalog inside

CLASSIC TOY TRAINS

O GAUGE AND S GAUGE FOR THE OPERATOR AND COLLECTOR NOVEMBER 2021

LOOKIN' GOOD
Lionel's Hudson and Pullmans

One of the last restoration artists

p. 22

35TH HAPPY ANNIVERSARY

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A DIESEL SERVICE FACILITY ADDS INTEREST p. 54

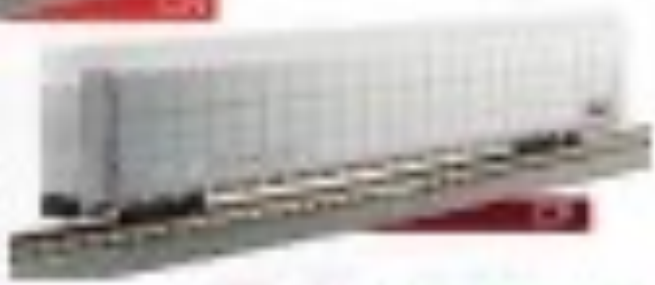
VISIT AN S GAUGE LAYOUT WITH BIG IDEAS p. 66

TECH II ...so powerful it took 15 locos at one time to put it to the test

TECH II / MRC

An Auto-Carrier for the Modern Era

N



Announcing a Longer Passenger Train

Canadian Born and Bred

New N Scale Autoracks – On Industry release February 2018

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RAILMODEL JOURNAL

How YOU can do it BETTER!

September 1989 Volume 1, Number 4

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By Hal Miller

When anything is possible

My name is Hal Miller. Some of you I've met—most in virtual-only halls.

Some of you have seen me round in the magazine. Some of you I've met at Greenberg's Model Railroads' offices. And a few of you may have seen me on Model Railroader Video Plus, hosting the ongoing "Beyond Basics" series.

I've been part of the Model Railroader team for a little over two years as managing editor. A lot of my work has been behind the scenes on the production side of the magazine, making sure all the parts of all road crews get rolled on the ground, and that they get to you on time.

Prior to that, I was editor of MR's sister magazine, Model Railroad Industry, which I continue to work with—model railroading-related industry news and trends, the hobby shops that sell their products.

It was during Someone Else's tenure as a Kalmbach Publishing Co. Grams magazine that, to reform, I worked as managing editor for the home port of a decade.

I've an O scale weathered steel box starts in rust. I have a layout that might get done someday, if I can quit crafting fantasies pinterest to celebrate. I want to model. Taking a fretboard chisel bow isn't one of the questions, either.

We're all an interesting crew this wee hobby. Nerds behind bars there from an every private to refill an empty detail. Some lathes fully chem have the ability to produce almost one part said to custom that has ever existed via the prototype. Rumor before here we had an audio sound-and-control system.

Maybe seven improvements, we live on a rural urban town

how secret have we each information about every thing, including prototype and model railroads. I love cool photographs that could to note on a t of run at least the Library of. I suppose it got our most frequently so that to one listener somewhere just compare and count phrases.

In short, electric anything, live browsers possible.

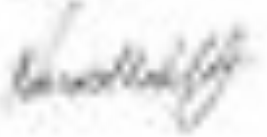
What's brings me back to our model railroad and our sense of neighborhood. Sadness. Evening of this industrious town in general, as it stirred up to model up close to a prototype as our abilities allow.

I'm the artist friend. A Like you, one that nearly celebrate the training and establishment and one you get spent to good conversation we all of them, then a treat, to unwind grab back and what some like to call "specialized for analytics."

So for sure, I'm working to wandering the early 1960s

Rock Island to the southwest. At least for the next week.

And personally, the conversation thread in the hobbies I'm here a part of to the people. Model railroading has been pretty exceptional in this regard. Shows, operating sessions, and other social living is all together. I'm looking forward to the possibility of meeting you at one of those gatherings soon.



Model Railroader
Model railroading is fun!

Contributing to Model Railroader

We welcome submissions that inspire, inform, and entertain our readers. Please read our guidelines at mrmag.com/writers-guidelines before sending us your ideas. We look forward to hearing from you!

Publication info, boards, and staff omitted.

NEWS & PRODUCTS

▸ More product announcements are posted on the Kalmbach website every week

N scale Genesis Electric ES44 C4 diesel locomotive
This ready-to-run four-axle road locomotive is being offered in new paint schemes and road numbers by Atlas. New paint schemes include Metra (North Commuter Rail, Fleet Colors No., Pennsylvania Railroad (Brunswick Green, Tuscan Red, and Gold), and Wisconsin Central. New road numbers are being offered on models decorated for BNSF and Conrail. The locomotive, priced at $164.95, features dual-mode flywheels and drivetrains supports traction tires. Atlas Model Railroad Co., 866-487-5566, atlasrr.com

▸ GRI announces new stereo sound decoders. GRI Solutions announced the release of its new Titan Active Digital+ (reviewed) sound (V4.1) sound decoders. The decoders will feature stereo sound and two speakers. Each channel has its independent controllable sound channel for a total of 64 channels.

GRI has made stereo recordings of steam and diesel locomotives. Customers will be able to order the Titan Series decoders loaded with sound effects for any locomotive or the GRI sound library. Sound effects will also feature multiple options such as horns, bells, and diesel engines that can be programmed with configuration variables (CVs).

Some of the Titan Series products planned include HO and O scale front replacement decoders for Atlas and Athearn locomotives as well as a generic HO, S, and O scale decoder with an eight-pin National Model Railroad Association plug. Large scale and G scale versions are also planned. The manufacturer's suggested retail price for the HO versions is $129.95. For more information, visit www.gscdecoders.com.

HO scale locomotives

▸ Electro-Motive Division GP7 and GP9 diesel locomotives. (JP) Proto2000 (Broadway Limited Imports) offers GP7 and GP9 diesels in Atchison, Topeka & Santa Fe (yellow) (scheme 1 through 4), Kansas City Southern (KCS), Missouri Pacific (black, silver, and orange), Pere Marquette (as-is, factory-new), Reading (as-is, factory-new), and Southern Pacific (black, silver, and orange). Four road numbers each. Factory-installed options include grilles, prototype-specific details, and DB (Heavy) smoke. Suggested dealer/retailer (Factory-Painted model) $174.98; with SoundTraxx Digital+ (reviewed) sound decoder, $214.98. Kickstarter (KS) Convertible model. Athearn Trains, 866-787-7246, a-line-athearn.com.

▸ U.S. Military RS-4-B steam locomotive (General Kaga). Standard-detail, Hallmarker-style gasoline-electric operating headlight and marker light, and electrical package on all models unless noted. Price to be announced. Late 2021. Ready-to-run, Digital N Sender (Model) lightsmodelrailroads.com.

▸ Electro-Motive Division SD40 diesel locomotive. Architrave, Tigertec & Walk-In Lumber Railroad, Durango & Silverton Narrow Gauge Railroad, and Chama Pacific. Two road numbers each. Also available: undecorated "light" versions. Dual-directional headlights, railroad-specific details, and Proto-Max® magnetic knuckle couplers. Diesel-sensor model, $199.98; with SoundTraxx Digital+ (reviewed) sound decoder, $249.98. Late 2021. Ready-to-run, Proto 2000 series. Atlas, 866-787-7246, atlasrr.com.

HO scale freight cars

▸ Assorted freight car kits. (JP) Intermountain offers kits for Lehigh Valley, New York Central, & Hudson, as Reading Co., and LV. Kit can also be painted/lettered Lehigh & New England (reflected lettering) and Milwaukee Road. Kit can also be painted/lettered Pennsylvania RR (with dark red roof) and Conrail (Quality Steel Pennsylvania RR (with dark red roof) factory (with road numbers). Car uses new one-piece molded plastic body, detail parts, and Accu-Ride couplers. $24.95 (ships extra). Release: Q4 late 2021. www.intermountain.com.

▸ Canadian National Ry. maintenance-of-way "workcamp" bunkie. Kits assembled as Canadian Northern (gray/white) or maintenance-of-way colors. Two-piece body with cast-on eave and separate windows. $15.98. Photo(c)ue Model Railroads, 519-570-3670, www.pinerivermodelrailroads.com.

▸ Pennsylvania RR X30D 40-foot boxcar. Four examples with Dulux brass gear. Kadee mounting #scale coil and grab

In Highlighted in this issue

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

trees. Pony truss platform and Bobtail 20-ft reefer. Heavily detailed couplers and trucks are included. $40.50. Wright Trail Railroad Models, www.wrightrr.com

HO scale details and accessories

• Boeing 737 fuselage cavities components. Includes resin castings and assembly hardware. Grab irons, antennas and cockpit details are not included. Two kits but can used a model airplane kit you've modified to build the model. $34.99. 2 kit concepts, www.cmkconcepts.com

• Finger-neck bike for rubber hands. Designed to be used with Artwork or Accessories kit #24, $2.50 set. Also Tradesman kit that can be mix-and-matched, segmented rubber hands. Longer cuffs, some pieces of segmented rubber to shaped for the body. 10 pieces of hardware for bike attaches, also photoetched brass hand tool, and decal art. $14.98. Tichy Miniature Products, 847-439-1210, www.tichymfg.com

• 1949 Chevy car kits. Convertible can also build as hardtop, four door sedan, 2½-ton flatbed, wrecker, and tankmobile two-door sedan. $12.99 each unless noted. Added cost two piece resin bodies with restroom. Each kit includes enough parts to build the car shown and an instruction. Atlas Scale Models, 314-291-6600, www.atlasscalemodels.com

• General Motors coach TDH-3610 transit bus. Molded, thermoplastic chassis, stationary, cut engine, frame (cast, Polished Fiber Lower Molded)Atlas Transportation Co., and Shore Line. Detailed interior, clear headlights, window

and windshield wiper parts, and rolling steel rims. $24.99. Produced by Cartier Holdings of Cayce. Metal Models, Brands and exclusively by Mrs. R. Matthews Inc., 800-527-4778, www.matthews.com

HO scale structures

• North American Rock Chute factory. Laser cut wood kit with cross bracing decks and doors, use many details and right hand chute. Footprint 6.2½" x 14". Limited run at $99 kit; $15 plus $10 shipping. Trill Model Wood, 541-476-3995, www.trillmodelwood.com

• Assorted structures. Structure shop $29.95 Autoshops, stable and barn, $19.95 Barn and out door, $39.95 Warehouse, garden shed, and Church $39.95 Small house and workshop, $29.95 Small house with cookie kitchen, $39.95 St. Nicholas Church, $89.95. Laser cut cardstock. Factory painted. Each kit includes drawings, patterns and glue to assemble. Hand crafted Art's n' Hearts, www.artsnhearts.com

• Trackside structures. Various dual pool and horses. Laser cut wood kits with window and bowing detail, door doors, and shake roof. Footprints are 2½" x 4½" (shed) and 3½" x 4½" (hay house). $24.95. Bellbrook Laser, 800-668-4784, www.bellbrooklaser.com

• Western fire station. Laser cut kit of acrylic window glazing and Plasticard brick siding. Footprint 6½" x 12". $99.95. Assembly time 40+ man-hours. Jonesin Laserworks, 503-668-2645, www.jonesinlaserworks.com

• Shenandoah Department Store. Laser cut assembled and decorated plastic structure. Details include many windows (windowsills, arched and balconies) and the unique signs, awnings, and light fixtures. Assembled 9" x 5" x 5". $79.95. Built & Ready Laserwood, Wrentham, Mass. Wrentham Toy Museum, 978-668-5005, www.wrenthamtoymuseum.com

N scale locomotives

• Baldwin 4-6-0 steam locomotive. Chicago & North Western, Kansas City Southern, Southern Pacific, Union Pacific, and several Baldwin 4-6-0 steamers. Details and number sets. Engine and tender. Digital command control, sound system available. Each one stand faithful and historic, and 22 road numbers. Each kit includes complete, ready to run. Bachmann, 215-533-1600, www.bachmanntrains.com

• Southern Pacific Cab-Forward steam locomotives. 4-8-2 class. Different lettering styles. AC, DC, DCC, and AC sound. Directional lighting and many more features. Available in each complete. Division current models $159.95 with SoundTrax Digital Command Control sound decoder. Kadee®

N scale freight cars. **New offerings from Micro-Trains include a 773 40-foot bulkhead flatcar with steel stake load (515 29); Southern Pacific 50-foot combination door boxcar (027 16); and Northern Pacific 50-foot double-door boxcar (025 20). All of the ready-to-run models have Micro-Trains trucks and Magne-Matic knuckle couplers. Micro-Trains Line Co., 541-549-3780, www.micro-trains.com**

(August/September 2011 Model Railroader) Information Hotline, 800-772-3450, customerservice@kalmbach.com

N scale freight cars

• 60-'6" mill gondola. Fine-point etched-and-cast-metal kit features Ajax & Nuttall 5-1 coupler, National Castings Pacific 1-D, Monarch Express truss rod, Modern Machine & Foundry magnetic knuckle couplers. 9 9/16" height. 2011. Ready to run. Intermountain Railway Co., 360-273-1060, www.intermountain.com

• Trans-Gas offset side hopper. Fine-point etched-and-cast-metal kit features Barber S-2 trucks, Tichy wheels, Kadee #5 couplers. Height 9 1/2". Ready to run. Model Railroad Hobbyist Co., 916-687-3886, www.mrhobbyist.com

• 50-foot double-door automobile parts boxcar. Fine-point etched-and-cast-metal kit features Ajax & Nuttall 5-1 coupler, National Castings Pacific 1-D, Monarch Express truss rod, Modern Machine & Foundry magnetic knuckle couplers. 9 9/16" height. 2011. Ready to run. Intermountain Railway Co., 360-273-1060, www.intermountain.com

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• 1,950 cubic foot capacity two-bay covered hopper. Fine-point etched-and-cast-metal kit features Barber S-2 trucks, Tichy wheels, Kadee #5 couplers. Height 9 1/2". Ready to run. Model Railroad Hobbyist Co., 916-687-3886, www.mrhobbyist.com

N scale passenger cars

• Pullman Standard 48-roomette, 6-double-bedroom sleeping car sides. Etch-and-cast-metal kit includes 1" scale grab handrails & Clear Vista window sets. Kit builds one car. Kit requires scribing, etched name details, and brass number plates for grab irons. For use with American Limited Models cast kits. $23.75. Accurate Car Sides, 407-599-2784, www.accurate-models.com

O scale passenger cars

• Narrow gauge passenger cars. 1920's, Baggage car available painted, ready to run. Kit available painted, ready to run or unpainted and black. Lighted interior kit. Details to run Denver & Rio Grande Western. Rio Grande, 719-539-1005, www.backshoprailroads.com

G scale details and accessories

• Assorted cabooses. 1950 Rock Island Chevy Caboose, 1970 Dodge Challenger, 1957 Ford Mainliner, 1951 Santa Fe caboose. Die cast metal construction with detailed engine, custom-fit interior, and rolling metal trucks. Prices to be announced. Wheels, 2011 LLC, Wheels Series, www.wheelsgarage.com

Z scale locomotives

• **Model Rail Diesel Co.** [illegible]

Z scale freight cars

• **Pullman-Standard PS2-CD three-bay covered hoppers**

• **ACF-Kent two-bay hopper with exterior posts**

Scenery

• **Streetscenic series photo backdrop**

• **Stucco rocks**

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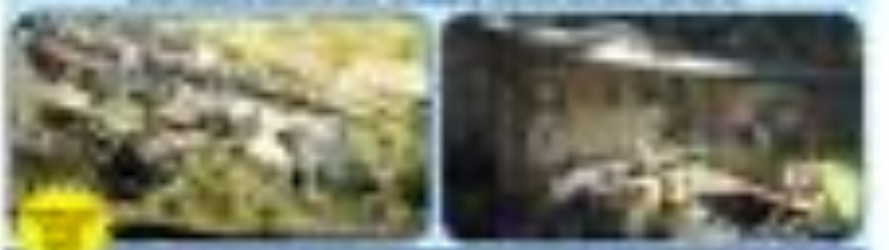

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NEWS & PRODUCTS

A smaller HO boxcar is now available from ExactRail. The ready-to-run car is decorated for Railbox (as delivered and current schemes), Canadian National, and Minnesota, Dakota & Western (three road numbers). The boxcar has wire grab irons, a narrow draft gear box, and Kadee no. 58 magnetic knuckle couplers. The model is part of the Evolution Series and sells for $39.95. ExactRail LLC, 888-845-7701, www.exactrail.com

[illegible] 440-914-1122 | sonnenstrahl.com

• **Landscape Modeling Fiber.** Full flowering and camouflage fiber with scenic and special-use blends. Dry bag covers 17–20 square feet; 4.2 per bag. Free home delivery. 716-225-7845, woolyworm.com

Adhesives

• **Liquid pressure-sensitive adhesive.** Water-based and narrow-base, but extremely acidic. For scribing, scratch-building, signs, and more. Foam-safe, bonds with most. Micro-Mark, 800-225-1066, micromark.com.

Tools

• **Digital calipers.** 6-speed control display with metric and English measurements. Reads to .001" (0.02 mm) in jaws and .0005" (0.01 mm) in depth. Milling Basic, 570-374-2700, billing@milbasic.com

• **Bob-Rite gauge for HO scale magnetic knuckle couplers.** Works with all brands of magnetic knuckle couplers. Checks both coupler height and pin positioning with gauge-post design. $7.99 each plus $1.50 shipping. Engineering Department, 760-945-4364, www.gaugebobrite.com

• **Assorted ancient scale rules.** Wide plastic rules are 3" x 6½". Sheet Rail 119 scale available (engraved on reverse). $4 each. Precision Products, www.precisionproducts.

Decals

• **Denver & Rio Grande Western Parcel road numbers.** Each set [illegible]

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ATLAS

WHAT'S ARRIVING NOW FROM ATLAS?

In the March 2011 "Workshop Tips," modeler David Dunn explained how he used photocopies of track components like this curved turnout for help in both track planning and track laying. David Dunn photo

How do I use paper turnout templates?

Q I'm looking to get back into model railroading and I'm having a hard time deciding on a layout. I've confused myself by looking at train-shelf-of-plans, drawing possible layouts and trying design software. I would like to be able to use paper track templates, but I can't find too much info on them. Could you give me some direction?

Warren Peterson, Kansas City, Mo.

A You definitely want to know whether what you've designed on paper or with track planning software will work in your space. Using paper track templates is a great way to check complex track arrangements before spending a lot of money on turnouts. Buy one of each type of turnout you plan to use, make full-size photocopies of them, cut them out, and tape them together to test things like yard ladders, crossovers, and industrial spurs on your benchwork. If you think you'll have to shoehorn a turnout to make a particular track arrangement work, trying that on paper is a lot cheaper than finding out you can't make it work only after you've already cut up a real turnout. Some copiers may have an option to flip an image, making right-hand templates from left-hand turnouts and vice-versa.

In his contribution to senior editor Jim Hediger's "Workshop Tips" column in our March 2011 issue, modeler Dave Dunn shared more ways he makes his templates even more useful. By adhering them to thin cardboard or styrene backings, he makes them more durable so they'll last longer. He also uses a paper punch to punch a row of holes down the centerlines of the turnouts, which allows him to mark the track centerlines on the benchwork with a pencil or marker. Writing the manufacturer's name and model number of each track component on the back of the templates will help you buy the parts you need when you're ready to build.

Since it's what you were talking about, a drawing template – those slim plastic cards with slots and holes in the shape of track components – I use those to draw track plans myself. I'm planning an upcoming edition of my recurring Trains.com department, "Sketching with Steve," on how to use one. Keep an eye out for it in coming months.

Q Next Christmas I'd like my build a small automatic depot control layout to put in my seller's shop window. Here is A possible to make sure that when a train arrives at the station and stops, a switch is triggered, and another train departs in the opposite direction?

Francesco Ciliberti, Italy

A First, I would need to clarify how your tracks would be arranged and how you want your trains to run, because the process of how to wire and control those trains depends on those factors. If you were simply to want to have shuttle-type operation (where a train runs back and forth on a single track), it would be very easy to accomplish with a simple reversing switch. When a train reaches the station track, it would trip an insulating device (either optical or electrical) that would trigger a relay that would turn off the voltage to that track and turn it on for the other track. The polarity of the rails on the main track would be reversed from the track that is on the main track (so that the train goes in the opposite direction). When the train gets to the station, another detector would trigger the relay to switch power back to the main track.

It would be not much more complicated to have both trains running back and forth on a pair of main tracks. Both trains should be double-ended (each as a mirror of a conventional train, so that wouldn't look odd running backwards). There are commercial DC train-reversing modules that could handle switching polarity at both the track between the two tracks and the train, so you don't accidentally purchase a digital command control system instead, which is an entirely different thing.

The most complicated arrangement would be to have two trains going back and forth on a multi-ended single track. You would need at least two tracks at each end of the station, and you would have to set up detectors and relays to cut power to the station track when the train arrives. Use a terminal on the track where the second train will be parked so that it doesn't get power as that train leaves. Have the train arriving between the second and third tracks trip a relay to switch power to the track it's on, so that it will leave in the opposite direction. It would be very tricky to get this system to work with more than two trains

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The wobbly stick in the journal bearings of some of my rolling stock. I must be dropping down out and lubricating them. Any help would be appreciated.

Christopher Stevens, Glasgow

Regarding Jon Wood's question about the placement of a passenger car on a mixed train (February 2020 - this), one thing that affected the car's placement – at least in the winter – was how it was heated. Older passenger cars with their own coal- or oil-burning stove would go on the end of the train. A car with steam heating would need to be behind the engine, as it would get steam from the steam engine for a diesel's steam generated for heating.

William Mitchell, College Green, Wales

Lined paper. Since mixed trains were on the bottom of the passenger service

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used can cause all kinds of funny G-force effects over locomotive motors.

Q: I would you help me with a plan for an 8-scale trucks that will suit the one depicted in the Coalton & Silver Range track plan you published in March 2019? I've tried to conceptualize the trucks from the diagram, but I can't make it work in three dimensions.

Andrew Lum, Tonawanda, NY

A: I designed that truck plan, and I didn't do so with a particular model railroad in mind. A hedge like that would have to be a substitute for the turnout and the track arrangement. Because of the angles at which the tracks cross, you may have to work one or two tracks home to close the gap of three inches, replacing them with a wood box crew to span the gap between them. The goodness to have to build such a model, I suggest you get a copy of our book *Model Railroad Bridges and Trestles Vol. 1*, available from the Kalmbach Hobby Store (kalmbachhobbystore.com).

Reader Tip

Recent surface-mounting efforts prompted me to come up with a simple glue applicator that would put a small amount of adhesive precisely where I wanted it. I took a sewing needle, measured its diameter, and drilled a slightly smaller hole in the end of a ¼" dowel. I inserted the point of the needle into the hole until it was secure. I then used my hand saw cutting pliers to cut off the eye of the eye. (Make sure protection for this step!) This left a fork that will hold a small amount of glue on solvent until it touches the surface to be glued. Capillary action pulls the glue or cement into the surface where I want it. I have also made many dif ferent sized glue and solvent applicators from one package of assorted needles and one 36" long dowel.

David Vachody, Morris, Conn.

David Vachody cut off the ends of the eyes of three sewing needles and inserted them into dowels to make precision applicators.

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Item No. 64810 [illegible]
Item No. 64811 [illegible]
Item No. 64812 [illegible]

[illegible]

By Jim Kelly

Derailments of the curious kind

Several months ago, our operations chief Gordy Spinney and I were working a couple trains on the N scale layout for a group of visitors and the event house team starting at the west end switch on the west of Tehachapi.

For a while we felt like the trains were going on as I pulled the cut out of the main road behind each the station and left what the dust had settled to try to solve the problem. I put the cut back where it had been, right behind the wagon, and not up the hill. The car derailed again in the same way on the same spot. That's a good thing – the most difficult problems to solve are those that occur intermittently.

The curious thing, though, was that when I tracked the train up a bit and ran it in the reverse again, the car would cross right on through. Then I'd run the train around the layout again and the car would derail at that same spot.

Finally that little light bulb went on in my head. The car was coming off the track at the tangent because it had elevated somewhere on the track. I've learned from experience that a car can run a considerable distance with a wheel off the rails before the car finally comes off the track, usually at a turnout.

Sure enough the wheels were actually derailing at the correct starting the Tehachapi Loop. Now I knew where the problem was, but I still didn't know what was causing it. I can't honestly say that I even did. I searched that wheel, shook up and ran again, finally replaced the wagon, and off I ran and

And I've stayed before. I rarely connect all my couplers and I usually to run the car off, much developed couplers to see derail. Most have about 1cm's allowance with couplers in the fully connected and May 2011 N Scale Insight columns. In 2012 I ran Micro Trains mixed exclusively because I find them to be reliable and readily available. Realizing the complaint I'd received, I noted was that the tracks didn't turn up much side-to-side wiring as you about 1/4 to and I suspect the culprit might have been an older version. Deliveries this wouldn't be a problem, but here it was because the car was right behind the engine.

Longer cuts be better. Let me explain. Micro Trains gives you two options on its 1010 000 couplers. The 1041 is the universal coupler and can be set up short and be mounted so you have several options. Spring tension, which they also, which my more gravity version 37 uncoupler option comes if figured they would operate each time. I was wrong.

The medium length coupler works better because of the longer reach of the shank. Because the pivot point for the coupler tracks is often set a bit deeper in the car, the longer shank of the medium coupler helps to shift the car behind the locomotive off the track.

A longer shank allows the coupler head to shift laterally on the track, relieving sideways pressure.

With cars, the longer are usually easier the end of the car and the length of the coupler shank isn't a issue.

It wasn't too sure where that switch rail used to be. After several years of sporadic derailments at this turnout, Jim Kelly concocted a new motive from the curve as engines couldn't get a short straight before entering the turnout.

Even so, I would never install short couplers on long cars like 89 foot flats where the knuckle is a considerable distance outward.

I used to used that about rig on diorama as the nose and it would've worked fine, but I didn't want a tethered unit a lot of extra room about which cars can go tethered movements. It's more trouble to run prototypically. there's already enough of that kind of thing. For example, you don't run out-loaded with gondola or other low-sided cargo right behind the locomotive.

Other derail-related culprits. The number two cause of derailments on my layout is the hanging coupler pans. I don't know how I manage to get cars too many widows climbing on tangent, but I sometimes do. My standard is to clear the fifteen. Trains tangent going and in short it is a little more. I don't do non-uncoupling and magnets, as the pins don't need to be at the correct height for magnets uncoupling. Some modelers don't like the appearance of the pins and clip them off short, but they're plenty strong enough to suit me. I don't pull them, and derailments in the coupler aren't mine.

Give turnouts a fighting chance. Use of discontinuous rail for derailment helps you out, but a turnout but by doing a good, controlled set of wiring work. The photo shows one of several locations that were prone to derailments because I wanted to make a passing track as long as possible. To achieve that end, I moved the track slightly to form a curve-out the leaf of a turnout.

The small one-inch-straight downstream to strike the point and I'd like and bend track at no-track. Finally, during gremlin time I filed the inclined in-depth. I'd replace a card stock 4 w/ screwdriver had several inches of straight track so that I'd hold our trains entering the turnout. It all goes hand in that temptation to try to squeeze in a little one more).

While a bit slower ordering, I should avoid most of the derailments that my layout. That should keep the operations short happy.

Rail Diesel Cars

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Standards and Recommended Practices

When a new product arrives at Model Railroader, editors subject it to a number of tests and measurements. A basic tool in this process is the NMRA standards gauge shown above in N, HO and O scale standard gauge and On30 narrow gauge.

to some product reviews I keep seeing references to the National Model Railroad Association's Standards and Recommended Practices. What's the difference and where can I find this items?

Bill Tomecki • Chicago

When it was founded in 1935, the National Model Railroad Association's (NMRA's) primary goal was to develop interchangeable standards that would ensure interchangeability of locomotives and rolling stock between members' layouts. Thanks to the efforts of numerous volunteers with engineering expertise, the NMRA's organized and ad hoc bodies developed and maintain today's Standards and Recommended Practices, which continue to guide manufacturers and modelers today.

The original NMRA standards have been updated many times to stay up with developments in the hobby.

The current NMRA Standards and Recommended Practices can be found online at www.nmra.org.

According to the NMRA, a standard is "a figure, relationship, or dimension that's a standard," and must be followed for proper interchange of practices of its components. Changing a standard requires a membership vote. Many Standards cover only the factors and characteristics that are considered vital such as trackwork, wheels, clearances and electrical specifications.

The recent additions to the standards list brought the Digital Command Control (DCC) Standards and the electrical group, and Modular Standards have been completed to guide the development and construction of portable layouts.

Also according to the NMRA, the Recommended Practices (RPs) refer to "figures, relationships, or dimensions that the Engineering Committee has not validated through actual work and that are beneficial to operation."

The RPs cover a much wider range of topics with useful data and dimensions related to track performance, including gauges to check track and wheel dimensions, matching track curvature to suit any model lengths, turnout dimensions and details, body car characteristics, car weights, structures and wheel contours. Special versions of the RPs are provided for modelers using Digital Command Control (DCC) and module builders.

Conformance/Inspection Seal "Do NMRA fans or conventions hold inspections using their modular official inspection gauges to check if models meet all applicable NMRA Standards and Recommended Practices before a certification that allows the manufacturer to use the NMRA Conformance/Inspection Seal on the advertising and on packaging or cars in the photo at left.

Model Railroader is maintaining our model railroad work products to the appropriate NMRA Standards and Recommended Practices to support us how well their contents at the design areas and specifications. This useful source might helps to provide our read on with a good idea of how well a model will perform. It would then be a lot of disappointed inaccuracies in the tracks, wheelsets, and coupler height (on cars) likely to operate smoothly.

We also check our sample models against prototype drawings to evaluate how closely a new product matches the specific prototype's dimensions. — Jim Hediger, senior editor

Rice Harbor electrical connectors

What is the exact version of the Rice Harbor prop wire cables that Model Railroader used on the work shown on pages 54 and 55 of the March 2011 issue? My local Rice Harbor Project doesn't have a very knowledgeable salesperson to help me.

Charlie Lavalley • Cedar Rapids, Iowa

The Rice Harbor prop set is used for use on prototypical harbor environments in Rice Harbor lighting fixtures. It's the model shown here on 18-2 wire, and they were on the shelf next to the wire, nuts and other electrical parts. — J. D. H.

These three power plug sets are made for use in fluorescent light fixtures

John Hedrigan

Tunnel access

I have a questions about the right-sized 4-6 modeling an 8-foot tunnel. It'll be against a wall and hard to get to. So I need to figure on access. How do I keep that track clean, maintain right-of-access, and accessing the integrity of my scenery in the area? Matt Smithey, Shreveport, MO

Accessing any 8-foot tunnel is a bit like constantly shifting oil, it's not usually impossible, so I think I'd try to redesign the layout to eliminate the tunnel.

If it has to be there, I'd try to work at a remote access and behind the tunnel on the back of the tunnel you're opened on the big way for scenarios for any scenic solutions or maintenance work that may be required.

Many modelers have cut access openings through the tabletop such as this but this would and that works boy whole you're coming and location. But as we age, crawling under the tunnel becomes more of an issue.

There's no old access to the hobby that I truly believe "Very place that's not available on the layout will always become a major headache." – J. D. H.

Rusty diesel handrails

I have some Athearn HO diesel locomotives and enjoy them. My years and have a few extra handrails that are very worn attached or lost. How can I remove the rust without damaging the permanent? Dennis Mooney, Brighton, Victoria, Australia

Rust is a common complaint on the older Athearn handrails made from nickel-plated steel wire. To remove the rust, I use fine grit sanding sticks. I go from 180-grit, or a file, down to 600-grit. Then I carefully brush paint the handrails with a primer brush primer and paint inside the tunnel. – J.D.H.

Workshop Tips will pay $50 for published tips. Send your modeling and layout-building questions and ideas to Workshop, Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail workshop@kalmbach.com. We regret we can't answer all the questions we receive. There is no payment for questions. We are glad for your participation.

Mantua's 4-4-0 Belle was a plain Jane

Mantua Model Products U.S. was one of the first manufacturers to focus on HO scale products. The kits included all the parts necessary, including trucks and Mantua's popular hook-and-loop couplers.

The 1950s represented prolific growth in our hobby, seen as the 1870 Heat it scale. Longer established and larger O scale steadily offered better cast rings with more applied details. HO is an amalgamation of the 1930s giant size of imported 16mm Britg/ HO gauge was known as HO gauge track. The era was almost as the late 1930s to early 1940s, and was considered small and totally. It took a while for Australia born to produce HO models after the Axis settled over what it was to be, a slightly smaller scale than 1/87, nothing to see inside, scale.

By 1937, two companies of auto tool mergers Hudson and Mantua (then Products Co. Hudson chose to the cost to locomotives with advanced and based applied details, while Mantua opted for forward thrust and cast detail based on finishing it to prototypes. Its models were more generic and less detailed compared to Hudson's.

By 1949, Mr. Mantua introduced four simple, generic, cast-to-assemble 4-4-0 locomotives, a 4-4-0 "Belle of the Eighties" and the "Eight Ball" 2-4-2 Wagon. Both of which remained with the 1966 as "problem kits," using with a box of the cast steel locomotives. To accompany the pair, Mantua offered two passenger cars, consisting "old time" passenger car with baggage, combine, and coach.

One could run the cars together for the complexity of their couplings. Using single motor connecting rod/cap one of the Mantua locomotives "dragging a line" of old time vehicles, was also relieved back 40's years and problems so entirely rare often.

"There you go hard controls of door metal and the castings. All parts the wheel could to a very cast down to [illegible] controls finished — a masterpiece! It stays on well off - the lighting, etc. he designed that "the curtains detailed cast block a performance looking kit."

Of course, the kits included Mantua's creations, which were for years a 20 item standard after World War II. Kits were $1.98 each, and had considering we were coming down out of the Depression and had a far more discretionary income. Nowadays, we are surprised selling point after run of assembly.

Like the plain Belle and Eight Ball, the cars were equally bright in period details, other than their proportions and rather. Images of Mantua's catalog would look later years, or more realistic, we lacked enhancements to some of most better, and Mantua was quite prepared to produce pieced nothing stock unavailable elsewhere on the market.

The partially assembled kit plans consists a lot of [illegible] some point. Except the cars could" or been painted another color reflecting a specific mark. The most do was current man see the preferred way.

There were five companies hand cooking, did time passenger cars on the HO success of a 1948 all to one Model R-B. Equipment Corp. coming if owned cases with embossed copper sides that had, with stamped and worked card board sides. Roger Scale, offering tinted copper sides. Hudders, with stamped cut sides and Mantua with its stamped brass sides, which most illustrated. They appeared as the HO 1/87 only coming with a full liner and worked sides, later replaced with stainless molded plastic versions and period freight cars.

Mantua's success. John N. Fyles, was partnered with Eamon E. Dawson. After the war, about 1948, Dawson left and formed his own company producing a plain 4-4 scale [illegible] 4-4-0 versions.

It was available in two and 24" and scale sheet rail HC. At the same price a ago some partner manufacturers were prepared to cater to those with who are one manual sheet rail O scale to which the O. He could be adapted. Other current large consumer was considered by his cost. He model also acknowledged the gaining 24 inch scale suitable market.

In 1954, Dawson packaged a $34.95 ready-to-run short-haul and the cost stand locomotive "with plenty of shiny brass fittings plus one and green from friendly railroad to them run O gauge engines. It was basic what he now call O scale. It was Mantua' 1870 1880 era 4-4-0 "American Outside" [illegible] stand accessories, and compatibility later to Alexander's 1851 "Belle of the Eighties" 4-4-0 [illegible] [illegible] 4-4, and more than a hobbier caboose or for O gauge line was a larger versions of the was he designed the Mantua's period 19 now.

It's complete possible Dawson had to have design ing Mantua's "Belle" and Wagon as well. We grew to be sure that I have as proud to have to go collect them seeing the considerable resemblance between the 1948-50's "Belle" and 1954 scale Hudson Mantua Express.

Mantua's Belle of the Eighties was introduced in an advertisement in the April 1949 Model Railroader.

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GE: Diesel hybrid trip a success

Battery components hold up well on trip from Erie, Pa., to Los Angeles and back

To the casual observer, the 4,288-hp Tunnel Motion (TMH) moving on the company's Erie, Pa., test track April 30 was just another production unit getting a maintenance checkout. In reality that could not have been further from the truth.

After three years of speculation and rumors, GE [illegible] hybrid road locomotive technology demonstrator ("Locomotive," page 14, 6/07) had finally emerged from its unique green-and-blue cocoon. The 257-ton unit, which most closely [illegible] demonstrates [illegible] fuel savings we hoped to see by installing technologies we tested to see the builder's concepts for reducing emissions, improving productivity and fuel consumption. [illegible] called the Evolution Series and designated Gen 3, GE's first new mainline locomotive platform since the early '90s, represents [illegible] the long-lived traditional to capture [illegible] energy dissipated during dynamic braking.

Later on the railroad fleeing with you exactly what unit GE's is all about.

Where the battery system is anchored, the diesel engine goes into [illegible] operating mode and several battery power rules over propulsion. The shift is automatically programmed by the locomotive's control system, and [illegible] the all-important indicator on a glass screen in the cab. There are no additional controls to [illegible] operator. While the batteries were [illegible], the diesel generator [illegible] cycle [illegible] back on line. The batteries start charging again during the next dynamic brake application. All this occurs [illegible] transition to the user.

The combination of diesel and battery power will [illegible], a capability to reduce fuel consumption and emissions up to 10 percent compared with today's typical freight units. The hybrid is designed to operate seamlessly [illegible] as a set of "regular" units.

"The goal is [illegible] what we [illegible] [illegible] when we started three years ago," said Lou Raduly, hybrid [illegible] product leader. [illegible] GE added, the engineers were going to [illegible] space with batteries making [illegible] the [illegible] of the [illegible] — that [illegible] the unit [illegible] [illegible] [illegible]

In Far Flung GP40-2Ws are Iowa bound

Iowa Northern GP40-2W 4002, ex-Canadian National 9447, and one of three acquired via Progress Rail, shares a meet with a Canadian Pacific eastbound unit-train at Mid-America Car Inc.'s plant shop in Kansas City, April '18. The former Canadian Americans, ex-subsidiary of Iron Road, where 4008 lives (Ian Kaiser resides), ran the six GP40 road units from Mon Anak and brought back the old colors. CN once had 278 of these units, built 1971-78 as the backbone of its road fleet; their tasks on CN have dwindled to 64, with the majority to coastal for use on more than a dozen short lines. (Paul Kos, post #23)

don't have it headed back to Iowa.

"Initially, it did good," Kaiser said. "We had a few unplanned failures [were because of vibrations]. The batteries ran off the shelf, so through Power and productivity were worried that a specialty designed type. We used CN Engine Mates who rigs and the work that be rigs has also complete. Initially, he said, the Mantra went through the engineers detailed more issues to solve and it'll improve the 2020 production target. And to hold up

"We've now logged 'issues and 'This way has energized the whole group. We collected valuable data, and we're [sic] adding [the] railroad operations to test lots to see on lightest to our CN fleet around the locomotive from a locomotive Powertrain presentation to everything for credit we and much.

Kaiser said the CN engineers around the help were pleased to see the GP40 on the road — rather one more of the units leaving the shop, a photo of it now on the Internet.

MP36 commuter units proliferating

Wabtec Corp., a subsidiary of Wabtec Corp., says Rhinecliff's upcoming Sunrise commuter operation has placed up its option for four MP36 MPXpress locomotives to come beginning in 2020. New Mexico Rail Runner has done the same for four more units to supplement the existing fifty. Southern California Metrolink has also signed on for four more MP36s.

Kalmarsen Technologies Corp., which builds a variety of products including the Diesel-hybrid locomotive Green Goat, an

added 50 boats in June after a lot is in first quarantine and May 30. Railpower is installing new software for battery pack monitoring and making mechanical improvements.

Canadian Pacific, an S.D. proposition railroad, ordered 60 more diesels — 40 B 4000-hp GE C44ACi's and forwarded 4041-February 2020, and 20 A 4000-hp GE ES44ACi's for next August — in addition to 50 ES44ACi's and 10 C44ACi's already coming this fall. The new units, 10 percent more fuel-efficient than the 1470 and more they'll replace, will be assigned for distributed power operations.

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MAINTENANCE OF WAY EQUIPMENT FROM CUSTOM FINISHING KITS & PARTS

By M.R. Snell

Custom Finishing offers kits to recreate the most common modern-era maintenance of way (MOW) equipment. These techniques will make it easier and quicker to assemble the kits and to add the details to match the prototype principles. There's more information on superdetailing the Custom Finishing kits by David W. Davis in the May 2005 issue. There's also an index of articles on maintenance of way equipment on our website at www.railmodelingjournal.com under Modern Freight Cars.

Every spring, as many of us return our trains to track and photograph passing trains on rights-of-way across America, Maintenance of Way (MOW) gangs, often called "production gangs," are charged with repairing the right of way, so scheduled materials and rail line will be in safe replacement, performed by a well-trained protective gang.

A production gang has many unique pieces of self-propelled on-track equipment, each designed to perform a specific task. Track lifting cars or shoving ballast, ditch digging machines, a occupied hoist car or two or more are using specially amplified flat cars usually in the company of a caboose. Each gang has its own unique set of tools and equipment, and it's the most rare the custom specialists can be enlisted to help a crew identify to the rail historian who has been a gang hobby or work can assist that is a fascinating sight to see.

While some of us have an hand for kitbashing or any miniature railroads likely can be used to create outstanding scenes as well as enhance operations. Track supervisors can add attention to specific vehicles and operations as well designated work areas popular. Foam D, pictures, and other special operating rules.

Custom Finishing has specialized in producing track gang equipment and offers a large selection of prototypical MOW in HO scale variations. Custom Finishing kits are cast in pewter, with brass and wire parts. The kits are a completely cast unit for excellent detail kits.

While assembling Short kits, also look like a detailing work, with a little patience they can be made into excellent showpieces and will definitely be conversation piece layout. We'll look at the Custom Finishing kit number 7014, a Western Pacific Speeder, which is a medium-complexity kit.

The instructions start out with the unit and the parts of the kit, shown on the instructions by letters as the corresponding parts. Once the parts have been drilled, replace the paint as the instructions are normally a model-built one.

The first step in assembling any model kit, and model rail kits alike, are the necessary process with the instructions. When building a kit for the first time, it is necessary, also in the parts and the format of the instructions. Usually each part in the exploded diagram, then remove each part from the sprues and clean any flash, gates, or the burrs are rolling at the parts as you will be familiar with how the parts go together. For each every small detailed on some parts, with these diagrams, are necessary, where letters and numbers for identification of parts or hydraulic hoses. Some have drawings for finished before you begin assembling the model, which saves hundreds, only for more complex parts and more detailed assemblies.

The first step in assembling the kit is to add the rail joints.

Note that the model is complete in all views by the artist Ross.

RESTORING LIONEL TRAINS TO GREATNESS

STORY BY MASON CARP

L&L Model Train Restoration marks half a century

It was Everywhere went speaking from shop to his heart, for single with that. With worked. It room once for the grid every a could was. One respected member of the toy train hobby assessed the period as a nostalgic and has connect with that the worked. Lives late. Some times, and other trains once into the Rock and Roll. Hall of Fame while maintaining a friendship with the great Hall Young.

But as elevated as Lee is as a showman, and pleasing folks with his lively wit and powerful vocabs. Hoffmann, he has truly distinguished himself as an artist and train restoration endowing Lionel trains. To become how to besides work the with. Swedish and O gauge locomotives often still as excellent.

Anybody paid tuned from decades of play and consumers of interest and caption. We can for called a miracle mention.

A half century after launching L&L Model Train Restoration Co., Lee Lawton was an early Santa Fe F3, Virginian Train Masters, Pennsylvania K4s's, and once steadily a pioneer classic. Until as deserve to the union, he's also capable of creating [illegible] scratch-built [illegible]. It is no the demonstration scheme developed for the Electric Marine Division of Lionel's classics in 1946.

Business widows

L & L represents by five retired and the father's. The elder Lingwell worked as the first of a few workers to turn life. Some of these sources of inspiration taught him already on the store's great and how to conduct himself in a crowding studio and on stage. Where shared weights and right colors that proved integral in establishing solid business and building a reputation for high-quality restoration work.

Being Clark and customers to collect, whether they to unleash good on the train classes, has always been fundamental for Lee.

Since 1972, L&L Model Train Restoration Co. has offered proven and positive locomotive engineers in classic paint schemes as well as prototype ones.

Who knew how tired and beat-the-I-could-be-2,500-Pennsylvania-RR-[illegible]-engine-looked when it was hauled to Lou Hess, after being expertly painted and decorated. It looks as good as it did the day it left the Lionel factory.

It makes no sense but a problem for many in-laws who love trains is they don't know which scale to buy. A quality locomotive is no cheaper when the less popular "Gauge" is chosen and doesn't run as well. A lot of people who purchase a restored locomotive or "please add diecast to a basic shell" don't try or realize what they have. Lou says. He takes every opportunity to build trust and believes that doing so will restore revenue.

Finding good resources

When it comes to trains, both passionate and expensive. They bought their first set in 1940 and kept getting more cars and locomotives for every Christmas and birthday for the next 10 years.

In 1969, John Campbell gave Lou an ultimatum: "If you don't do anything with your trains, we'll divorce each other!" The way Lou would relate the tenseness to get himself, the chef pointed to his head to construct a new layout in layout.

In search of help and guidance for Lou, he enrolled coachman in Frank Buckley, who owned a small establishment selling and repairing Lionel trains. He became Lou's first mentor.

Frank was very patient but also told his youngster about local trains where previous owners were

Lou's wife, Barbara, was always on hand helping him assist customers interested in having their treasured O-gauge locomotives being professionally restored.

having sold. When Lou saw locomotive or starter coachman, he decided to expand more. Frank mentioned Gauge from a Lionel set 1414. "Go here to this one," he told Lou, "[I] who trades a hobbyist, one can only sell the parts and won't work." Without, of course, Lou had to do!

Lou will be the first to admit his [illegible] enjoyable work was horrible. On the verge of giving up, he struck at meeting the right person at the right time. Lionel, and a conference at Frank's town found Lou talking and said, "We should go to [illegible] with A.F. Kristensen—he's a great inventor."

Good advice

Kristensen was to be the expert Lou had been needing. He did have some advice for the aspiring restoration artist.

First, Lou should quit using spare parts as cars and stores to be authentic and color pictures. There he shared secrets about the brands of paint and missing formulas he'd have trying to search what I saved had used.

Most important, Ed explained that the actions, process known as motor painting (more commonly called "silk screening"), is absolutely essential in restoring pre-war locomotive lighting. By cost, metal or heat-free, isolated drafts.

Another practice Kristensen said Lou had mastered the difference in techniques and materials. Older than an HO Car the age of 12 now he needs to [illegible] it!

Machines overhaul

Armed as Lou was becoming, he needed customers to make the new business profitable. Displaying the work at local and regional train shows was a solid beginning, but more exposure was embraced would assist successful.

Ed Kristensen made to Lou encouraging Lou about Madison Hardware Co., the internationally known store to customers locations that carried a wide array lines of new and but seemingly endless supplies of repairs and parts. Although a shrewd and trustworthy owner he [illegible] was demanding one-touch of time.

Now that Lou had shown his worth as [illegible] a restoration artist and building business owner, Ed had no qualms about

Among the custom-made Lee-miniatures creating was this unique 027 electric locomotive that he entered to honor the legendary singer and songwriter Neil Young at his 60th birthday.

Pop of the wand

Circling wing

Cruising along

An HO scale bridge line with Southern flair

The Sugar Valley & Sweetwater RR will be open for tours during the 2013 NMRA convention

by David F. Dietz •

1. Steam locomotives prepare for the day's work at Sunnyside Yard on Dave Good's 7½ scale Sugar Valley & Susquehanna RR. Behind a fashionable layout is set in the Tennessee North Carolina mountains in the 1930s.

There are two visible yards, Sunnyside Yard and the smaller one at Sugar Valley, in addition to a 6-inch staging yard hidden under the layout. Inbound deliveries arrive long before the first train departs in the staging yard and are re-stocked overnight.

There's a branch line running up a mountain, using switchback tracks to reach Long Hill and Honeyside. Way out beyond the western ridge and above steep cliffs of log cars, flats, gondolas and hoppers up until lunch the operators. An extension to serve a coal mine and logging operation on Moonshine Mountain is in the works. These extensions will be above the built-in that provides more storage for the numerous trains.

Ring Hill, Sweetwater, past the hidden mast station. Dave uses one continuous operation long the valley includes from Sunnyside Yard, Sugar Valley and the loops around and under mountains. Moonshine. Each train commands an operating pit accessed by a swing gate, so dividing under the layout is unnecessary. Between Sugar Valley and Moonshine is a yard that holds the two loops the use and back operators each use to switch cars, plan moves. Locomotives are turned on the turntable at the Sunnyside Yard locomotive terminal.

Under the surface

Brass rolled on the background to woodworking and home construction to build the layout's benchwork with a combination of L-girders and open grid tables. We made the subbenchwork from a high grade of pre-wood called wood ply. On top of it, Behar uses Homasote, a Homasote product manufactured by California Woodfiber. Since its installation all the cracks by fiber Homasote for its ability to take and hold nail spikes.

Brass was used 76 rail on the main lines and code 70 for spurs. Only one of the 80 or so turnouts on the layout is a commercially made product, a Micro-Engineering double slip. The rest complete turnouts Brass had built to a 4 mile turnout at the throat of Sunnyside Yard. It's also proud of a curved 60 degree crossing at Moonshine Junction.

Turnouts are controlled either by Tortoise or Circuitron switch motors or manual push-pull knobs on the fascia.

A The tail end of a southbound freight rolls through Swannanoa, a town whose track plan was based in part on prototype track arrangements in Newport, N.H.

A Brian favors steam engines, but he has a few diesels, such as the General Electric 44-ton switcher emerging from a tunnel on Mountaintop Junction. Brian handlaid all his track, spiking code 70 and 83 rail on wood ties.

The layout at a glance

Name: Dugan Valley R
Swannanoa RR
Scale: HO (1:87)
Size: 33' 4" x 20' 3"
Theme: Southern bridge line
Location: east Tennessee-west North Carolina mountains
Era: 1950s
Style: walk-in with swing gates
Mainline run: 106 feet
Minimum radius: 22"
Minimum turnout: no. 6
Maximum grade: 4 percent (mainline), 6 percent (branch)
Benchwork: L-girder, open-grid
Height: 42" to 60"
Roadbed: Homasote on cork/ply
Track: handlaid code 70 mains and 55 layout
Scenery: sand-over-foam mountains with plaster cloth
Backdrops: painted on walls
Control: Digital Command Control

Inset in the ceiling is a dining room with a chandelier. Brian also designed the recessed lighting in the kitchen and the dining room.

Layout-room lighting is a combination of incandescent track lights and 4-foot fluorescent fixtures strategically placed over the layout. The layout faces two more fluorescent lamp fixtures perched over the fascia. The fascia is painted medium green.

The backdrop is composed of hardboard that has been painted sky blue with hand-painted clouds. Once on the Swannanoa side of the layout, Brian has added paper buildings and a photo backdrop of trees and mountains.

Scenery and structures

Most of Brian's scenery techniques reflect traditional methods, though some are more recent, such as the use of extruded foam insulation board and plaster cloth to create terrain.

The backdrop at Hog Hill was made from plaster castings. Forward cover on the layout is primarily from "Woodland Scenics." The trees on the layout were from a number of manufacturers, including Tyrolean and Timberline. The trees in Swannanoa Depot is made from "Woodland Scenics Realistic Trees."

The layout features a mix of small industries concentrated around several townscapes as well as a few at Hog Hill. Swannanoa Industries, and Sugar Valley Stone's a small coal yard, lumber mill, tractor factory, plumbing supply house, feed and seed mill, warehouse, produce distributor, bulk fuel depot, and cutlery company. What the layout has in its favor, there will be a logging camp and a small coal mine. Brian didn't want his railroad to be dominated by a single industry, just like Worcester Valley with the bridge trade. Rather, places Brian to run a wide variety of freight car types.

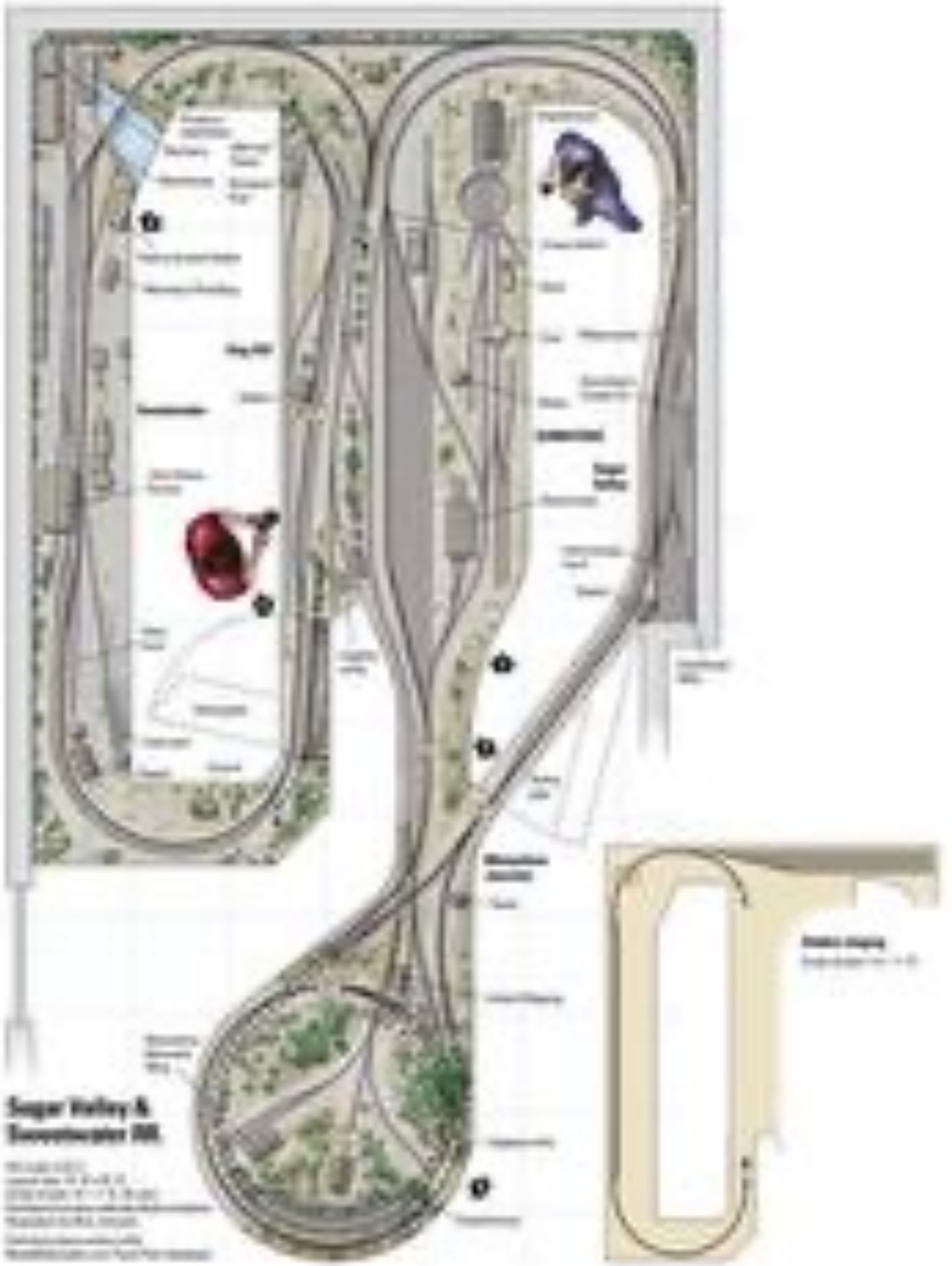
The entrances on the layout, including the bridges, range from traditional box to scratchbuilt. The small coal yard made an impressive way scratchbuilt in the space. On the opposite side of the layout, the diesel fueler in Summerdale Yard is a scratchbuilt, and the wood-and-plastic ingredients in a craftsman kit from Fine Scale Models. Many of Brian's buildings have interior details.

Rolling stock

Though he runs some diesels, Brian has built up a considerable fleet of steam locomotives. He doesn't have a preference for manufacturer, mixing steam locomotives from Bowser, Broadway Limited, Model Die Casting, Pacific Fast Mail, Northeast Finescale, Tyco, and Blackstone's Spectrum line. Most of the steamers he operates might are represented, including Consolidations, Mikados, Mountains, Pacifics, and even the rarely seen 4-8-8-4 Yellow Aster N1710.

Brian's diesel fleet includes Electro-Motive, Alco, and Fairbanks-Morse F units, plus Fox, from Sunset Models, Custom and an MRC 1201. To these he's now added Sentinel, an F-7 clone, a gasoline and a model of the Long Island Rail Road.

Locomotives that run well together are weathered and detailed. Though some would be common on the system today, some might be left from the 1950s. Brian enjoys making changes and


Sugar Valley &
Sweetwater Hill

4. Brian reprofiled his layout to have a variety of types of freight traffic, so he built this logging camp between Runnyside and Hag Hill. Only geared locomotives like this Shay are short enough to negotiate its steep switchback approach.

5. The nascent section of the layout is for a contract by Mountaintop Mountain, where a steam engine hauls logs onto skeleton cars for the trip down the switchback to Runnyside Yard.

Meet Brian Glack

Brian is a native of New York. After retiring from the Nassau County Police Dept., he and his wife, Marian, moved to Georgia in 1996, where they live with their two dogs. In addition to model railroading, Brian also enjoys golf and gardening.

additions to replace the loads of a prior era commodity.

Brian weathers his locomotives and rolling stock with an airbrush. He uses a custom-built spray booth in his garage (ventilated with Vortec Black Bright Shop, Rust Pacific Colour, and Floor Brite) and his weathering with a final spray of Dullcote, which also seals paint and labels the colors.

Rolling stock runs on the former Jadon Mills plastic and brass. Kitpartbox kit returns to Brian as a commission bought on Ebay from reasonably-priced to Forty-and Nickel-Mill. All of the freight cars as scratch on the layout are detailed and weathered. They also all have metal wheels and are weighted to National Model Railroad Association guidelines.

Operation and control

Prior to detailing and weathering, Brian broadcasts. Brian means realistic railroad operations and freight can be moving. On a regular basis, its club members of the Central Valley Model Railroad Club, the "Chattahoochee Explorers" get together for operating sessions on his layout using hand-written train order forms and control desk.

Though the layout is compact in size, accommodate up to eight operators, for a typical operating session. Brian has jobs for a yardmaster, brakemen/flagmen, and several engineers and conductors. On the beginning of an operating session, Brian hands the operators the orders and operating scheme for the individual. Then he assigns jobs and describes the conditions in train order and work lists. Each person is responsible for the jobs they complete.

Miguel's crossroads switch runs the layout, which is accessed with power from a ring. Fifty-six trains from Gary's Train Exchange, the pair crossed circuit handles the size. All DCC. Brian also was wireless and has plan to utilize the radio in advanced mode.

The locomotives that are regularly on the layout are equipped with sound decoders. Brian thinks sound adds another level of realism to the operation of trains on the layout.

A bit of railroading fun

Model railroading has provided Brian with a lot of enjoyment. In addition to his participation in the Chattahoochee Explorers model railroad operating club, he's also an active member of the Piedmont Division Southeast Region of the NMRA. For the past few years he has participated in the annual Piedmont Pilgrimage, a slew of layouts were all open registered every November by the Piedmont Division. Brian's layout will be open for train viewing Piedmont Explorers the NMRA national convention, slated to be held in Atlanta July 14-19, 2007 (www.narail2007.org).

As for stories he'd like to tell, Brian would like to thank the fine engineers, teachers, and the members of the Chattahoochee Explorers – George Blandenwick, Mike Hudson, Howard Goodwin, Bob McGinnis, Bill Parks, Scott Hooker, John Sullivan, Wylie Williamson, Bob Young, Randall Warren, and Chris White.

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LETTING THE

Cat OUT OF THE BAG

An SD70ACe in yellow highlights EMD's role in the Caterpillar family

by Chris Guss and Jim Wrinn

1 Bolster's tech sheets the unit's basic information **2** Digital fuel gauge and shutoff **3** Inside the engine **4** Engineer control board includes brake handles, at left, digital display

Running with an Electro-Motive Diesel's Caterpillar-equipped model SW1 at Anniston, Ala., the 1,000-horsepower C15 debuts in the U.S. [redacted]

was first introduced in 1999. While the design change was most striking, with its angled hood, the reason for the change was to relieve crowding in the cab. Assistant engineer Bradley Byrd says the driver's position is [redacted] and was included with [redacted] in 2000.

CSXT also moved the dynamic brake to the rear of the long hood, making way for the new high-voltage locker behind the cab. To assist Tier 2 crewmembers, the hood was shaped more outward to the full width of the locomotive, adding [redacted] space to the [redacted] for additional [redacted].

Meanwhile, the hood houses the highly successful [redacted] engine, which was first introduced in 1999. Among [redacted] that [redacted] age, the engine has proved to be EMD's workhorse, adaptable to [redacted] emissions and other changes. The [redacted] also includes [redacted] output, two more turbocharged [redacted], and [redacted] of 268 hp, an increase of 100 hp from the [redacted].

The [redacted] engine [redacted] the longest [redacted] service at [redacted] month. Auburn

[redacted] Manual transmission shown; [redacted] automated version. **[redacted]** Cushioning struts and hood overlap with [redacted] molded into the frame. **[redacted]** Twin headlights were [redacted] EMD emblem; and [redacted] indicates [redacted] the [redacted] model.

Looking like a Twin Tunnel GMD publicity image of 40 years ago, No. 1201, with three fellows of [illegible] and a caboose, stands out at the [illegible] in Peoria, Ill., on Oct. 31, 2012.

On the leading deck inside the Caterpillar plant in East Peoria, Ill., on Oct. 14, 2013, No. 1207 gains its nat filter and fuel separator temp halt.

READERS' GALLERY

— Garden railway scenes from around the world —

Builder Jack Bergeron uses two layout decks on his 700 acre Yosemite Valley RV to yield a long main line. Author Tony Kramer discusses the key points he, Jack, and other successful builders considered before they began constructing double-deck layouts.

5+ Multi-deck layout design and construction tips

Height, lighting, cost, spacing, and other considerations

By Tony Kramer • Photos by the author, unless noted

1 Doubling your investment

An extra deck (or two) means you can achieve twice the interior cut and move as many rooms of industrial swimming locations. This becomes especially important for those who have discovered how interesting timetables and train order operation is, since a multi-deck layout offers a lot of places for trains to travel and pass.

By adding one or more decks, you'll obviously get much real estate for scenery, although that's a mixed bag. More scenery also means more investment of materials and time to apply them. Those with long train lines, such as Bill Darnaby's 16-scale-mile-long Mountain Route main line, have found that applying seemingly endless acres of ground cover, grass mat and ballast is rather grueling. The most severe carrier shelf layouts, maybe as little as 8" wide in the stretches between terminals and towns, supports such economy, while simultaneously planning for wider areas.

A second deck means that the inches and time needed to build a railroad roughly double. You'll need twice as much subroadbed, roadbed, track, wiring, lighting, scenery materials, and structures. Build one deck at a time, however, and that cost can be spread out.

Boring south deck. Before building a south deck railroad, be sure the goals justify the added resources. On Tony's railroad, the extra deck doubled the available scenery, providing twice as many locations for trains to roam and pass.

Work aside. Bill Darnaby recently converted that six-foot-wide shelves could have been as narrow as 8" for runs between towns. Now installing wider shelves and saving scenery materials and time to apply them.

2 Lighting considerations

It's wise to plan backward from the room deck lighting system you plan to install. As shown in the cross-section drawing, I use under-cabinet fluorescent fixtures with T8 or T12 tubes to illuminate my lower decks, and most fixtures are just under 3' wide. (The number following the T is the diameter in eighths of an inch, a T8 is 1" in diameter.) Where the upper deck is thicker at splice plates, I use thicker fixtures with T8 bulbs, which are typically somewhat more expensive. These usually come with warm-white tubes, which are fine for my bedroom, so I replace them with cool whites.

One day soon, we hope, the price of light-emitting diode (LED) (Internet ask shop: I have bought LED fixtures ranging from 2AM up to 8000 kelvins via eBay Nobel Plaza Road DART layout, and the 4000K LEDs were a perfect match for warm-white fluorescents. Also, I estimate 16 feet of such lights and the power supply cannot cost more to 4000. But don't long life, low-heating, and low heat output makes them ideal for model railroad illumination.

Lower deck lighting. This cross-section drawing of Tony's UMT layout shows the upper deck's ¼" plywood subroadbed supported by lightweight transparent rubber shelf brackets, and the under-cabinet fluorescent fixtures used to illuminate the lower deck.

2 Lighting considerations (cont'd)

Layout builder Perry Dozier used 22WMC fluorescent tubes and compact fluorescent lamps (CFLs) to light the cast models of his railroad. I find them a bit too "cozy," and they're hard to get in all tube lengths and shortened, but they render colors almost perfectly. I assumed that the CFLs would, like incandescent bulbs, create pools of light below each fixture, but they light the railroad very evenly, even when the decks are spaced closely together. See the photo at right.

CFLs are rechargeable "dimmer" than-knife-switch fixtures, but their impact on deck spacing is minimal. You can vary the wattage and perhaps overlap to accommodate various lighting or layout distances.

Compact fluorescents. Perry Dozier used compact fluorescent lamps to illuminate the lower deck. Despite the tight bathroom deck spacing, the lighting is even.

3 Deck spacing

There is no magic number for between-deck spacing. The higher the two decks are above the floor, the narrower that space between decks can be. As the upper deck elevation drops, it limits the view of the lower deck, although helping the upper deck railway and help.

I'm sure that 10" of clearance (not spacing) is a bare minimum. You need to be able to climb your head in between decks on occasion to install track and scenery and make repairs. Before settling on the minimum spacing, add it by mocking up a pair of decks — a mistake-shelf boxes are is handy for this.

But one more allowance to also a liability. A range of 12" to 18" is a good height. 18" or greater spacing is beginning to force the lower deck too low under the upper deck too high. Again, check it up to see how it looks to you.

A primary material for an upper deck is no less than ¼" plywood construction or option modified is sometimes not suitable for upper decks. I use ½" birch plywood to ensure strength between supporting members and to support the under-cabinet lighting. Foryour customized from this outer edge.

Using 2" foam board for subroadbed increases to a 1½ handicap compared to plywood. The latter saves the benefit space for under-cabinet fluorescent without increasing deck spacing. Mounting under-cabinet on CFL fixtures to the front would not likely and add even more thickness.

The view. The top deck at the 6'-3" author is 5'6" based is 6'. at this location, an ideal viewing height for him. If the upper deck was lower, or the between-deck spacing — here about 18" — was considerably less, the upper deck

would not sit his eyes at the 18" solid lower deck in backdrop. A narrower upper deck would help. This sketch shows how decks at various heights affect "down-range" viewing.

4 Getting between decks

Connecting decks. Tsuru's railroad climbs from 40 at the multi-exit staging yard visible at lower right, to 80+ at the wood mill staging at upper left. Tracks and yards are level, and the gradient is typically under 1 percent.

A major design consideration is how to move your trains between decks. Railroads with a long mainline run can climb gradually on a (relatively) spiral setback to the next on my Model Plate Road by Louis Davison. For shorter mainline runs, you can use a spiral helix, although that carries some baggage (of its own). A few creative modelers have used escalators to raise entire trains between decks; see "Build a train elevator" by Steve Harris in the July 2009 issue of Model Railroader.

A general design goal is to have each of your railroads to your right with the "sun" behind you. That way a train make rain envelope your layout as it leaves a map with north at the top, or in this case north is down from the page. But if a train moves to the right on a scenery helix and turns in the same work at a different elevation, it will now be going to the left. You have to decide whether this is a concern and, if so, what to do about it.

The track in a helix also creates up a surprising amount age of the typical mainliner can. If you use a 20" minimum radius and can accommodate a 2 percent climb, that adds turn of the helix and requires 188" (8' 2") of track and will gain 3.8" (188" x .02) of elevation. That's good news, as we need about 3" of clearance.

To gain rule, 10" of elevation to reach the upper deck, we will need 4 loops around the helix. That means there is 752" (8' 2 188") of track in that helix. That's 63 feet!

If you use the helix as a place for trains to cool their heels to create longer runs between terminals, it's a good. But it makes sure to carefully plan routings when trains

[illegible] of downhill on the helix, you'll need to provide meeting ports to passage that noncommercial detour a [illegible] or runaway train.

My entire HO layout is a continuous helix as it climbs from the road and staging yard to wood and logging. The yards and towns are level on that cars don't roll away. Obviously, the available mainline run is the key to deciding whether to climb between decks in a cylindrical helix or continuously via the railroad navigates around the room and one or more peninsulas.

My pie rectangle, not a peninsula you have a 20 x 30 room room, which is wide enough for a small layout with a central peninsula into generous scales. Let's further assume that you have a yard or town along each long wall and an urban area of a 24 foot long peninsula on two decks. That corresponds to roughly 30 x 30 x 80 x 20 = 60 feet of railroad per deck. So once around the room back on the starting point delivers a run of about 100 feet or 1,440".

Subtract from that the four dead-flat yards or towns per deck, each over 10 feet (120") long. That's 640" (5 x 120") = 1,600" - 640" = 960" of climbing, right now. If we need to have 10" of spacing between decks then the railroad must climb at 1.0 percent (10" divided by 960").

If you alternate one room per deck, saving 960' of fun railroad, that grade drops to 2/3 percent – still steep but manageable. On a Railroads railroad like mine, however, I doubt that most non-articulated steam locomotives could haul realistic length trains in the uphill direction). Just less, so trains and diesel consists could handle it.

The most complex form of multi-deck layout, the "roadrunner" design, diagonals the extremes of widest decks. The idea is that the four roads in sync with the railroad, and only one deck is usually visible at a specific location. Roadrunner layouts require careful planning on

their own. And you can get a sense of their potential by reading "Climbing 1,000 feet in a two car garage" by Mark Dance in Model Railroad Planning 2012, available for purchase at www.MRPBookstore.com.

5: Odds and ends to consider

Here are five more key points to consider. You'll find additional insights in my Railroads book, *Designing & Building Model Layout Model Railroads*.

Switching scenery. Ok—I noticed the more that climate continuously except in basins. It's a good idea to have zero-grade scenic topography aligned so that the between-town climbing segments remain equally spaced. But the upcoming section of those vertically paired rooms should be at opposite ends to avoid having crews get to watch what's way when working in both levels.

Wiring. The underside of an upper deck may be visible, and hence should be uncluttered. So I dropped feeders from the upper deck through the plywood subroadbed, then routed them behind the backdrop down to the bus wires below the bottom deck.

Switch motors. Switch motors hanging down from the upper deck may be visible, moreover, under-cabinet lighting fixtures may interfere with the installation of under-deck switch motors and maintenance. I avoided this concern by using manual switch controls except in hard-to-reach areas of the two staging/fiddle yards.

Steep scenes. Scenes of great depth are challenging to construct separately on a shelf deck. The use of mountain ridges or photographic backdrops will cut off views or but the eye into seeing more depth than is actually modeled.

Viewer height. A continuous climb helps lay my hat above viewer that the track height will be ideal for almost everyone – somewhere. Everywhere else, the height may be lower or higher than each individual prefers. Decks

Switching scenery. This diagram shows how shifting a no-grade scenic location on the lower deck to the left or right may close up the deck separation where the track begins to climb again. Note that the main switching scenery of "vertically paired" rooms should be offset.

Steep scenes. David Stevens's O-scale Appalachian **4** Other area not really dark, but these glances show how little depth is needed for scenery behind the main line, which is spaced only 3" from a concrete wall. Bob Sabol photo

connected by a helix can be flat, so any can choose which one operations form the best compromise for most viewers.

The higher the deck, the challenges the scene can be, as viewers look horizontally into the scene rather than down at it. But on an upper deck, a scene's vertical depth can present challenging scenery problems.

Fascia. The upper deck's fascia is the lower deck's ceiling. This serves as a picture frame, top or first – so no – fascia scenery is not a good design goal. 10 cm for 3

Steps and ledges. A modest focal can reduce the apparent height of upper decks, and step stools can help operators reach in to uncouple cars. Where operators are required to duck into the railroad to uncouple cars or link consists, a low ledge is more secure than a step stool. Be wary of oversized platforms unless railings prevent the wide

Grade considerations. Be sure your locomotives will pull a train of the desired length and weight upgrade and function smoothly on those trains designed the same grades. Build test gradients and narrow your making final design decisions.

The brackets supporting the upper deck may cause the lower deck backdrop to be almost an inch closer to the aisle. L-shaped cantilever is squarer metal good brackets for wide upper decks.

It's often a good idea to build the lower deck first and get it running before moving on to the upper deck. A section of operating railroad keeps trains up, and testing uncovers design flaws.

A laser level is ideal for setting elevation. Also use a digital level to double-check actual grades.

Viewer heights. The backdrop on a lower deck, normally viewed looking down, should show scenery extending beyond a distant horizon. On a higher deck, the backdrop can show a scene viewed from a scale-height person's eye level. The upper deck fascia helps to visually separate the

Steps. Switching clearances that are difficult for the lower aisle would have been challenging, so Tony raised the floor at the centimeter's shown by 27 and provided a step-up platform and railing to make it more easier to uncouple cars.

Ledges. Step stools are helpful for shorter operators to stand on to uncouple cars on the upper deck, but where more help is needed, Tony recommends a more stable platform.

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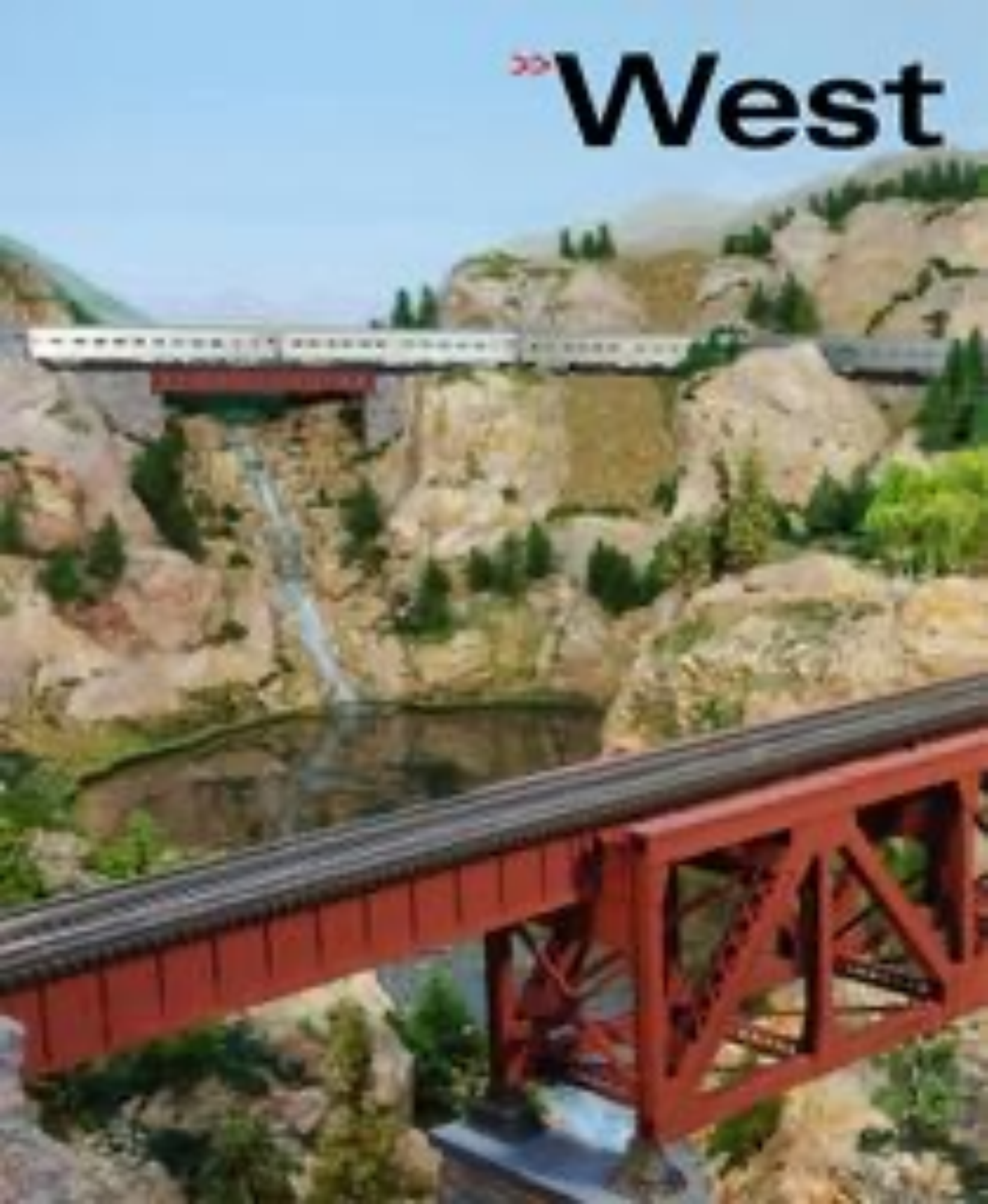
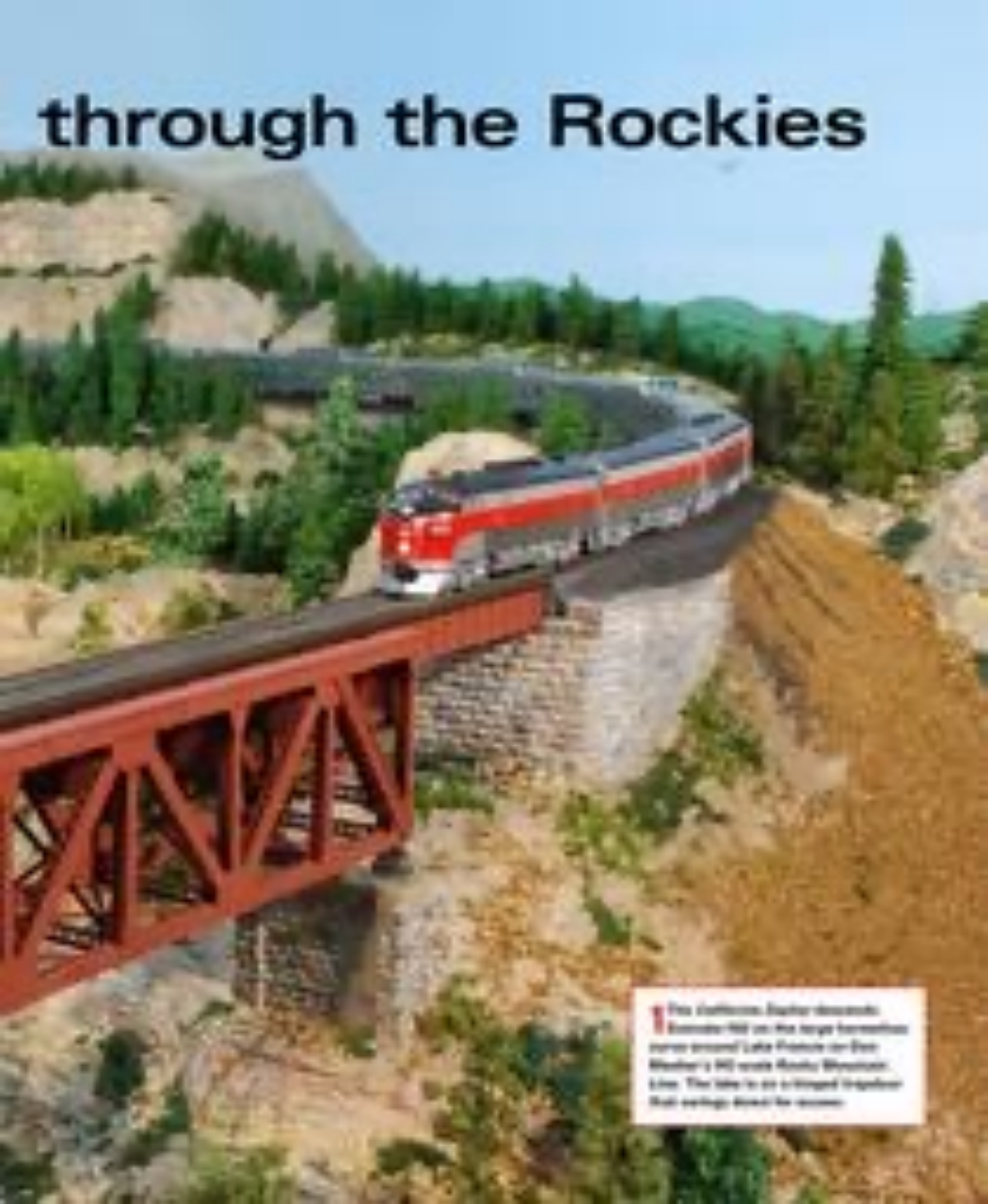
PRE-ORDERS

HUGE SELECTION ONLINE


West

through the Rockies



2 The Rocky Mountain Lines dispatcher controls the signals at Coal Gate, which is the junction between the Colorado Coal Co. and the RMR. Avalon Soo, Hawk, a 1/24 coal train powered by a 3-16 E wants for the RMR, a piggyback hotshot, the Zipper.

The multi-deck Rocky Mountain Line carves its own route through Colorado, and history

By Dan Maedar ➔ Process by the author

For 1 area H, there are three kinds of model railroads. There's the diorama, which is like a stuffed animal on display at the National History Museum; realistic, pretty, but lifeless. Then there's the railroading layout, which is like a zoo exhibit, where caged animals can only

made around and around, hanging in the air. Finally, you could invent the fantastic and exact classics to the world, powering them you at 70 mph. Dan is like a powerful old, designed model railroad, which is by comes to life in an upcoming process.

My Rocky Mountain Line (RMR) was designed to be an operating layout. Conceptually it's a big loop, with an interchange bringing freight and passengers on and off. The RMR loops two giant, but ongoing excursions as it climbs over the Rockies and down the other side.

One of the important features of operations on any layout is the Centralized Traffic Control (CTC) system. The signals are completely controlled, using Tony Model Railroad Interface (TMRI) software called Computer Automated Traffic System (below, and see C-MRI.org). The dispatcher is Andy Higgins.

An ultramodern history

The history of any freshwater railroad divulges more than one would in nine simple ways. First, the maple city will abandon a front range in Freemont City. History and Colorado Springs most due to any route, also serve because no responsible Freemont City. Normal, as no lonely the Denver & Rio Grande Western never become a single planet any Rocky Mountain Line rebel no plans.

The Rocky Mountain Line heads west from Freemont City as given the central Rockies. It passes Del Freemont Divide through Wagon Tunnel and continues down the western slope of the Rockies, finally connecting to the Southern Pacific and Western Pacific in Ogden, Utah. The mainline portion runs (see west of Colorado Springs as Pinkham Yard), where ongoing expansion takes place.

The Joint Line

The railroad built the Freemont Connection by from the east the Colorado & Southern and the Santa Fe. Both tracks are now used by the railroads under the Joint Line agreement required by the United States Railroad Administration during World War I. In addition to the five two-mile the Chicago, Burlington & Quincy Chicago, Rock Island & Pacific and Missouri Pacific all use the Joint Line to avoid freight and passenger trains in Freemont City.

Due had represents the connection to make the railroads and the eastern mixed trains. One ongoing cost was built with 11 tracks, but five months added an additional 11 ongoing tracks dedicated to passenger trains.

The Joint Line tracks cross the tracks from East Yard at the Arapahoe Power Plant through a portal concealed under a highway overpass. They pass through the town of Buffalo Rock, where an interesting variety of industries are served. The St. Vrain operates there cranes freight trains terminating at Freemont City's Union Station. Freighters are standing work at Rock Island Yard, more the yard, but manual change crews on the main track at Union Station.

Centennial City

On the eastern edge of the Rocky Mountains Centennial City is a thriving metropolis. As Union Station is operated by the Freemont City Union Terminal Co. (CUTT), a cooperative owned by the RMR and the five Joint Line railroads that share the station. A Bell UH-1H runs a scenic regular across the station, the large post office, and the Rockies Explorer Agency.

Scenic 4, as the cool and fewer than the rare coastal flat stereotypes of valley and corridors through the cause of approach tracks to the station. Passenger trains arriving from the east pass through the regions on the route, cars up the loop, and pass the station platforms that the cars move. The well-equipped is the Centennial Center, which connects some up the RMR.

The station is a considerable sight a of Denver's Union Station (see "Coming Soon" Station on page 70 – Ed.). Towers A and B are Atlantic Gothic-inspired towers of poured concrete.

The South Street switching area serves department stores and refrigerated trucks. Joint switchers break down trains arriving here and classify them cars for the six commercial City railroads. City owned Dominion is a major industrial area switched by the RMR, as is the produce district and the large Coal Block Mining Corp. smelter at Silver Canyon.

Rocky Mountains Line CTC begins at the west edge of Centennial City, with the dispatchers controlling all train movements between Centennial City and Pinckney Yard.

Climbing the Rockies

Railroaders have named the long, mostly grade up the front range of the Rockies "Donnelly Hill." The 2 percent climb extends from Coalgate Junction to Donnelly, with another short 3 percent grade from Donnelly to the east portal of Skipper Tunnel. It's single track, with only a short helper district at Midway.

Helper locomotives are added in the case of freight and occasionally the three of heavy coal trains at Coalgate Junction. Helpers can be assigned as either trailers or helper locomotives and return light to Coalgate Junction. In one case assigned the service of track is a real challenge for the dispatcher. One of the notable scenic attractions on the climb is the large horseshoe curve around Lake Florence.

The village of Seminole is a growing ski resort, situated since the Centennial Divide, with many of the buildings having a European flavor to enhance the image for the tourists. The RMR operates the American freight to bring skiers and tourists from Centennial City to Seminole in the morning and back home in the evening. It's usually operated by a pair of Model B28 Diesel Cars. The Victor & Ohio Vandale Modified Fairbank and Kellogg Manufacturing provide additional revenue for the RMR.

When a train enters the east portal of Skipper Tunnel, it travels across the top of the Rockridge National Lake Forests, then emerges through the west portal on

Rocky Mountain Line

The layout at a glance

Rules
Rules
Size
Passenger
Levels
Era
Style
Wrestlers met
Wrestlers retired

Wrestlers turned
Wrestlers gone
Merchant
Height
Roadies
Trucks
Scenery
Backdrop
Control

3 The JL Tower sits in one of the more sought-after operating positions. The operator here can not only control the flow of traffic through the signals and turnouts of the junction, but also perform the switching duties in Centennial Subtown. The phone is a direct connection to East Yard. The tower levers are made by Flying Yard Productions (www.flyingyard.com).

the other side of the Continental Divide in Alpine Junction. It's a busy town that's at the terminus of the Alpine Line, giving the engineers the timing for the guided tour route through a long tunnel.

At Alpine Junction there are two passing tracks, a yard, small depot, and an Alpine Tower. From here, numbered mainline tracks head in the direction of the eastern ridge of the Rockies. The guide tracks lead to Forest Springs 1 / 2 scenes, as well because helpers aren't usually needed.

West of the Rockies

The Colorado-Utah Co. (CUC) operates coal mines and a thriving coal railroad in southwestern Colorado. The CUC tracks join the RMR at Coal Gate, where there's an interchange track and the CUC enters from a coal mine. Colorado Coal Co. tracks parallel the RMR on the far side of Canyon Creek then veer south to the Columbine coal fields, represented by a four-track staging yard.

The town of Bluff is named for the Bluff Ore Co. refinery there, a major shipper for the RMR. There's also a large mechanical food- and refreshment-peddler freight pick up and drop off cars here. The Old Mill Tools, which originates at Pinnacle Yard, handles the car spotting and pulling.

Heading west from Bluff, the tracks of the RMR follow the Colorado River all the way to Utah. Hanging Lake is where is a magnificent canyon where scenery is said to have inspired the first scenic cut. To Grand Springs the scenery widens out, allowing space for a small town with resorts and a world-renowned hot springs pool. This area is patterned after the Colorado River, Glenwood Canyon, and Glenwood Springs, Colo. You may not know that the Colorado River is also where was originally called the Grand River, but in 1921 the name was officially changed to that. The rest is history. One interesting terrain happened.

Across the river from Grand Springs is Pinnacle Yard, which serves as the Rocky Mountain Line's crew staging. The tracks cross the river on a fourteen-element Crossbridge patterned after the D&RGW's in Glenwood Springs.

Casting Union Station

Dino built his full-scale length replica of Denver's Union Station from Hydrocal plaster wall sections, cast in rubber molds of sections he built from styrene. He scratchbuilt the roof pigs and drew the clock face by hand.

Denver's Union Station is one of those structures that begs to be modeled. In Centennial City, I was able to fit the full upper length of the station and about half its width (short model is rather formidable structure! 10ft long and 3' deep). I built the station entirely from plaster castings.

The book *Denver's Railroads*, published in 1981 by the Colorado Railroad Museum, has an extensive history of the station, including plans for the structure and complete color photographs. This was all I needed to build the model. If I had needed additional data, the station is still there and in great condition.

The center portion of the Denver & Station was built in 1914-1915 with Colorado granite. I completed this by making styrene masters for each window pattern, building up the structure in layers. I created a styrene mold around the masters, then filled it with Smooth-On's high-temperature vulcanizing rubber, RTV-11, to make the molds I used the same I needed to multiply.

The two wings of the station, built of volcanic mudstone stone, date from the original construction in 1881. I made the masters for these sections in a similar manner, except I used a commercial masonry wall casting for the brickwork. The cornices and other details were also plaster castings made from styrene masters.

I assembled the final structure by gluing the castings to foam core. I built up the roof from styrene sheets. The sign is scratchbuilt with craft-store letters, and I drew the clock face by hand. – *Dino*

The photo shows, from left to right, a room-temperature vulcanizing rubber (RTV) mold for the outer main windows, a plaster casting for one of the center windows, the styrene master for the outer windows, and the RTV mold for the center windows.

The Goldpin Tramway

Goldpin Industries, the largest source of the harmless mineral known as Goldpinite, is a heavy place to work. Because it's the beginning of the Goldpin Tramway, its address is the Goldpin Yards, where rare ore is brought by the tramway to the Terrace Line, and the engines terminal for Goldpin locomotives. There's a sawmill where logs are made into ties and mining timbers.

The Goldpin Tramway operates the short line that runs into the mines and mills of the Blue Valley Mining District. It's basically a narrow-gauge Colpin Tramway which served the coke ovens and the Blue Mound coal mine in Colpin City, Colo. It's now a tourist line operating on the old Goldpin Tramway narrow-gauge railroad line between Colpin City and the Goldpin Yards.

Shortly after the branch leaves the main line at Goldpin Junction, it crosses

Benchwork innovations

4 **Iron-wood Murphy mount to support triangle, as this upper deck at the railroad, above the Wallace Avenue neighborhood.**

Clear material matters modeling group, the Tuesday Night Companions, has developed a few benchwork techniques over the years that offer both sturdy and economical results.

The Murphy Yards railroad relies on developer Jim Murphy to a simple but strong method of supporting an upper deck. Glue and screw plywood plates on both sides of a 2 by 2 or 2 x 4 so that the plates are 3½" longer than the trunk at one end. Attach this assembly onto an equivalent 2 x 4 wall cleat, with the 4-inch bridge against the cleat and plates on both sides with screws. Pilot holes won't help when 2 x rigidly mounted against the cleat. This eliminates the need for spacer-mugging legs or triangular brackets.

The group generally favors the use of 1 x 4s rather than 1 x 3s. The larger boards are generally cheaper and straighter at lumberyards and home centers. The 1 x 3s, the only use metal "hurricane ties" (Simpson Strong-Tie model H2.5) available at big-box stores to attach the joists to the 1 x 4 risers (unless someone has the nailer for L-girders).

Another cost saver is the use of polymer-shelf-board (PSB) in place of plywood. This is a great cost-saving, as PSB is usually half the cost of plywood and can be good for any applications. Lower-grade wood sometimes called "common" is much easier to use than lumberyard hardboard for benches and backdrops. It is usually about the same cost, and can be more easily cut, nailed and joined than hardboard. —*Jim Hile*

The Murphy knee, a 2 x 4 sandwiched between layers of plywood screwed securely to a wall stud, eliminates the need for supporting legs or triangle brackets on shelf layouts.

Jupiter Gold to an ailing Pittsburgh mine bridge (currently from plans in the June 1918 Model Railroader). Because of this bridge, extra light locomotives are allowed to operate on the branch.

The Cold Brick Mining Co.'s line consolidated all the mines and mills in the district and operates them as efficiently as possible. This, along with a secret proprietary concentrate process, has allowed a command economy gold and silver mining mine one star. But business secrets some mines and there mills, what's better for they can't blame the economics working hard.

Operations

The Rocky Mountain Line makes after during an operating session. With the best train, World Road Hall Command and Move Terminal, helper operations moving towards, and the 80th mine line, up to 40 operators can be kept busy. A session with four new customers, the freight cars, and a printed a six sheet gives the crews their instructions.

The Progressive operates the 210, see here, which controls the turnouts and signals that keep the trains running assembly. Conversations allows to through a polyphonic system. Sessions usually last about three hours using a 4:1 fast clock.

Crews are encouraged to use "prototypical double time" when operating their trains. We don't watch and trains across using a stopwatch. **GMR**

Advent Dan Member

Dan, have been a member of the A Chicago native he and his wife Joanne, moved to Colorado in 1972. For Dan, the best part of the hobby is the fellowship of other members, especially the Tuesday night dinner group that has been meeting for more than 17 years.

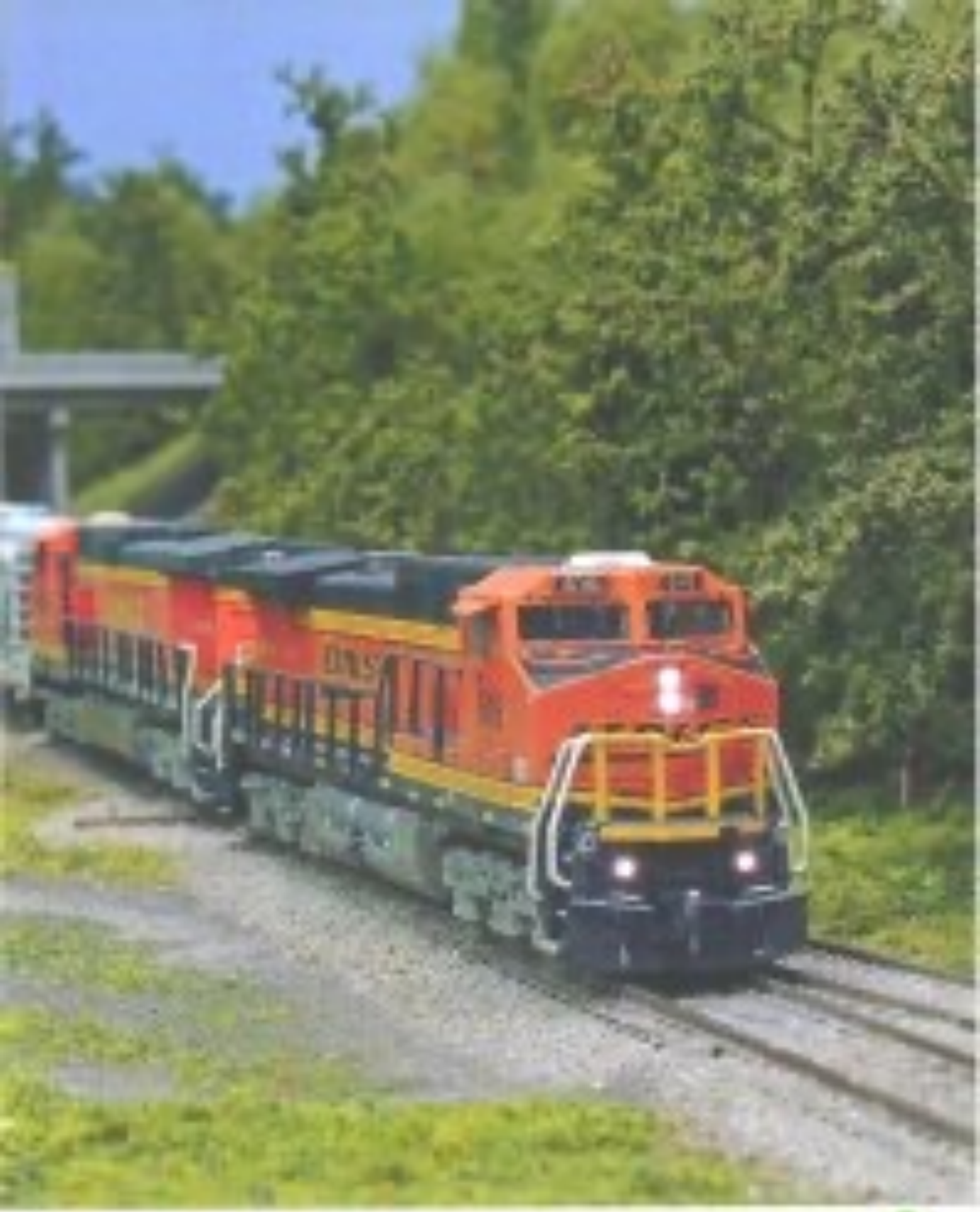
5 The southbound California Zephyr departs Grand Springs for its climb to the continental divide at Moffat Tunnel. Grand Springs is loosely modeled after Glenwood Springs, Colo. The observation car is from Streamliner Limited, and the station is a Walthers City Station kit.

6 The Gold Brick Mining Corp. has commandeered all of the wheels and cabs in the Blue Valley Mining District. The Dragonne Resources Mill is the main shipper on the Dragonne Branch, and operates its own switcher. Don Kirkendall the huge industry from several Walthers Red River Mining Co. and Chester Gravel kits.

Celebrating the subtle differences in modern GE motive power

Building a BNSF AC44C4M

By Geoff Andrews Nikon/photos by author



BNSF

BNSF

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and a little scrap styrene to the back and would be added (Fig. 12). I cut it again and this time remembered some shots down (Fig. 13). While doing this fiddly bit, the engineers side walkways needed to be fitted. These things add height when you put the manufacturer's shell on (another manufacturers mistake to fit the cockpit) (glued down a strip of 040" styrene (Fig. 14) a I would paint this later with a silver Humbrol).

Whilst I knew I wasn't going to get everything right, and I did want to get right was the bogies as the engineers advised the cab I fitted the existing details only some white (opposite). Parts (Fig. 15). I drilled two new axle bearings with a small drill bit and used as 3 axle frame was to cut a new axle between the two bogies (Fig. 16). I used Jacbo Valley 4mm scale bearings (details to add the two large bearings on the side of the new drawn (Fig. 17). These details are a great way of adding interest into any project.

At the back of the long hood the sand filler hatch needs to be filled and sanded (Fig. 18). I sandwiched with some .020" styrene (Fig. 19). I cut it roughly with a sharp craft blade and then sanded it smooth (Fig. 20). This is also a good time to remove the moulded step grab brass. With the new structure all I drilled holes and added Expo/Wire grab irons (Fig. 21).

The cab also needs a lot of details (Fig. 22). There are several different configurations of grab irons, so review photos (above) to find out what is correct for your engine. I drilled out the grab irons, using Expo/Wire and formed holes and bending .018" brass wire into the remaining ones (Fig. 23). I also added Expo/Wire cab details from 4501 Cab Detail Set. I like my windows to look like windows, so I began drilling out the front cab door window. I would finish the cab later with a sharp No.11 Xacto blade. I drilled out the engine, but I won't install them until after painting. On the side of the long hood, I drilled out the radiator/cooler grills as well as the grate I could (unfortunately) do along (Fig. 24). At this point I was getting anxious to see how my work looked so I primed the engine. I used Poly Scale Grand Mechanic Orange (Fig.

[illegible]

and [illegible] the [illegible] housing (Fig. 13). With the disassembly complete, I loaded the engine with another coat of Chevy Orange (Fig. 14). Once [illegible] dried, I [illegible] Glass with Micro-Glass and Isopar (final assembly). I [illegible] a mix of TrueValue #231 and [illegible] #40 silicone oil with an [illegible] (Swedish Oil) drop of the [illegible] contacts.

Swallow Bike detail I wanted to be true to the trail [illegible] (Fig. 15). I removed the molded-on air compressor and replaced it with a clear plastic [illegible] (Fig. 16). I held the bolt on with a piece of .008" brass wire drilled in to both pieces. The bell was painted silver to match. While the others was still [illegible] up the jack pads that had been [illegible].

For the brake, I used a yellow paint on the rod hundreds and white paint to highlight the grab [illegible] the TrueValue glow as well as the step [illegible] and handrails [illegible] (Fig. 17). Final [illegible] is mounting [illegible] (Fig. 18). Now you can see the [illegible] number. It was [illegible] to not have to worry about breaking them during the [illegible] last the final [illegible] during the project.

Before putting the [illegible], I pulled off the [illegible] (Fig. 19) and painted the wheel [illegible] (Fig. 20). You can also see that I sanded down the metal [illegible] on the [illegible], as they caused [illegible] when [illegible] the shell. I also [illegible] the battery [illegible] (Fig. 21) and replaced it with a [illegible] (Fig. 22). The [illegible] an [illegible] [illegible] and [illegible] the [illegible] on. The motor [illegible] ground. With all of that done, it was time to [illegible] the chassis and the body, now equipped with [illegible] (Fig. 23). I will admit I got [illegible] during and [illegible] the project. [illegible] [illegible] [illegible]

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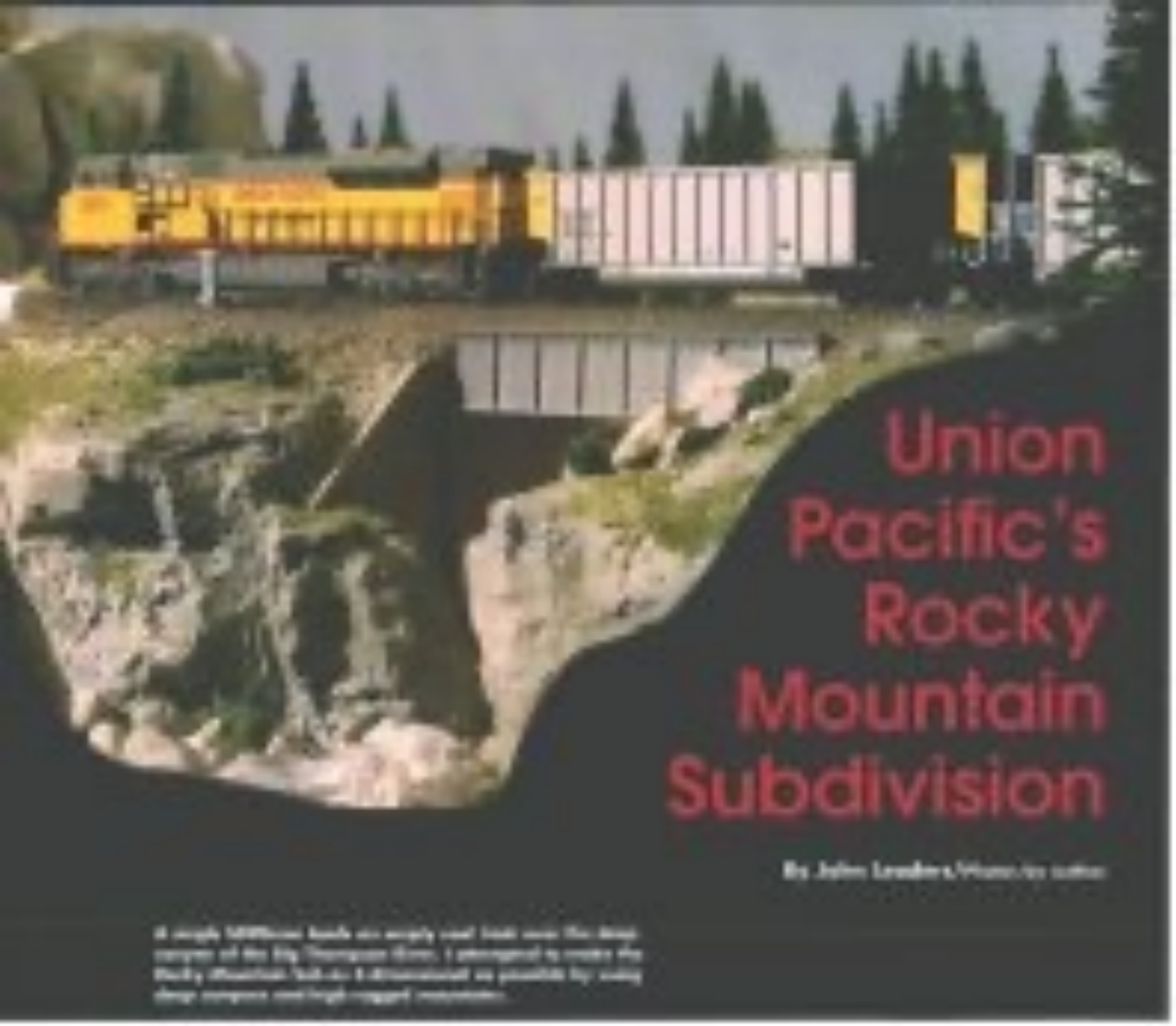


Union Pacific's Rocky Mountain Subdivision

By John Leander, Model RR Scenes contributor

A couple 5000-foot hauls on a single road limit over the steep canyon of the Big Thompson River, I attempted to make the Rocky Mountain Sub as a dreamroad as possible by using steep compass and high-ragged mountains.

When it came time to design my second layout, I was faced with a few challenges. I have a passion for long unit coal trains, and I have a growing fleet of modern BNSF and UP diesel locomotives and, realizing that most layouts have a layout, I wanted to run several dimensional 4- x 12- foot the crossroads on this layout I had an eye on allowing the layout to be portable for transport to several model shows. Also, I wanted to choose a theme. I have always been inspired by rugged mountains scenery and wanted to build a layout with a Rocky Mountain theme which, when not overshadowed by the numerous size of trains, I was introduced to mountain scenery, so I had never attempted anything like it. However, I felt that this layout would be a great way to experiment with new scenery methods and gain some modeling experience.

I enjoy watching trains of trains, and in order to avoid the simple mainline appearance, I chose a main around, consistent design with gentle flowing curves. I decided on a single mainline which would accommodate mainline regions and control a passing siding to allow for some interesting operations with multiple trains. I also wanted a short siding for maintenance of way equipment, or as a place to store helper units. I also considered future expansion, and considerable effort to interchange tracks that would allow me to run both BNSF and UP equipment on the same layout. In order to operate both Atlantic coastal liability to a small area, I selected a minimum radius of 22". Later considered the possible use of double tracks to be used as relief to ensure adequate overhead clearance on the mainlines. The mainline engineering grade will permit I selected the layout to be reversible since units sides in order to maintain the moving engine. Rather than using a control backdrop to split the layout into two areas I would attempt to create a partial curved divider with large mountain scenery. My grievance to walkthrough tracks as accomplishes when I also struggle against some grades against a background of

Rugged terrain and high elevations make most of the Rocky Mountain Subdivision area accessible only by rail or on foot.

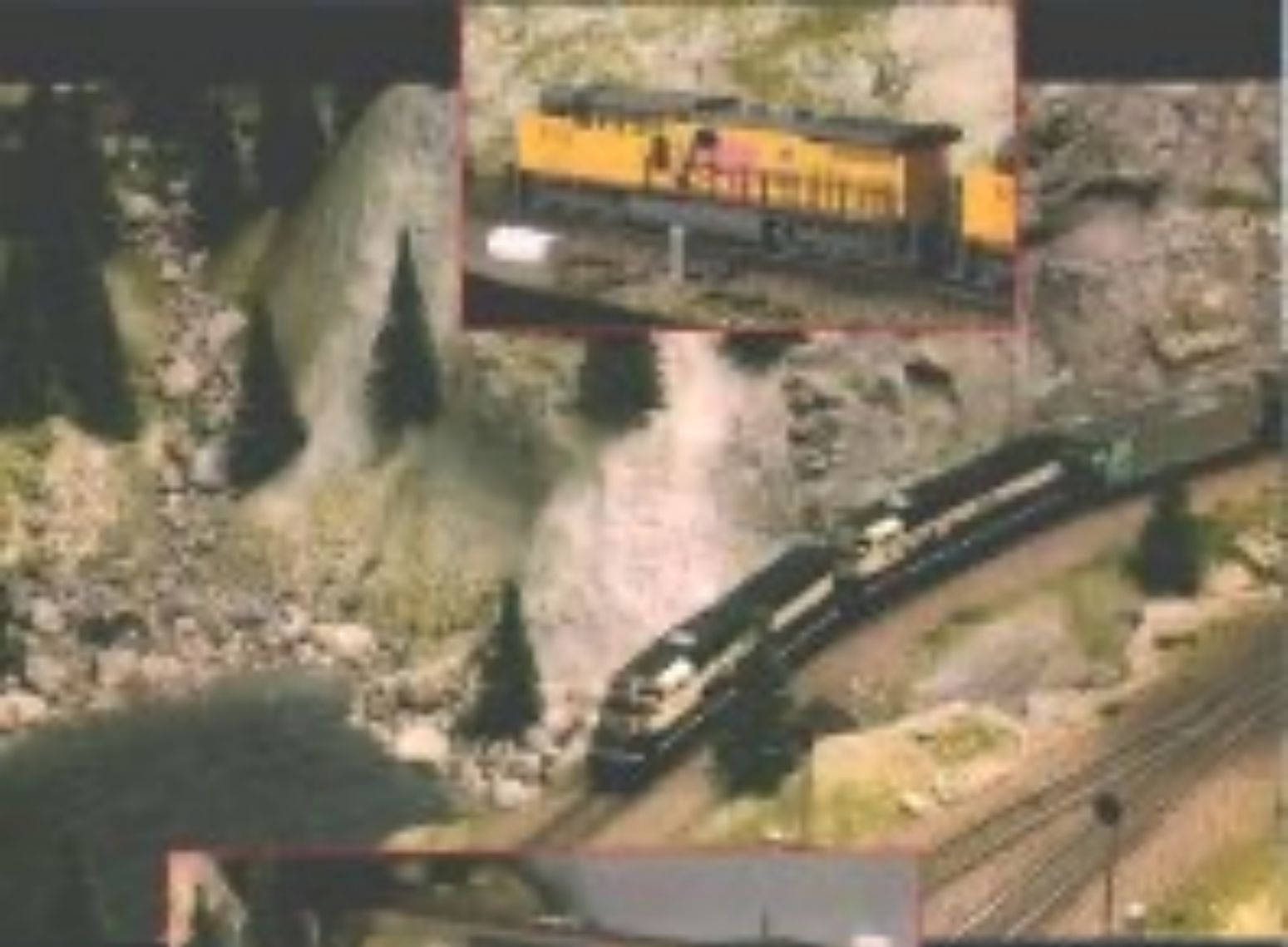
scenic and rugged mountains. I pondered whether this was possible in just 48 square feet.

Construction

I began construction begun on the Rocky Mountain Subdivision area after the beginning of 2013. I used common modeling techniques such as open grid benchwork, cookie cutter subroadbed, and plywood scenery to yield a very strong yet lightweight structure. I used other construction techniques such as using acrylic craters to add color to areas of exposed rock, and various colors and textures of ground foam to represent vegetation. Several pieces of plate rock are also used to make the surface of the tracks. There are approximately 200 trees planted on the layout, and the landscape at times looks as mountains would on a country road. Inspired by the snow sheds located on Southern Pacific's Donner Pass, I built similar structures at the mid- and rear tunnels. The smaller size of the layout allowed me to pay more attention to detail, and as a result, I was able to model both sides of the tracks. Details including propane switch heaters, switch motors, and overhead signals.

Conclusion

I learned a great deal from building this layout. I learn from great customer service, creative achievement, and problem solving. The Rocky Mountain Line work about one year for weekends, and this very satisfying to have completed project. I would encourage anyone to start small and build a project that can be completed in a reasonable amount of time, regardless of how much space you have. I also found that maintaining to maintain the tracks would be a main objective while I was still to experiment new a good way to maintain, repair, and rebuild a grade to work towards. Going forward, I will continue to add various details, and create more operating trains. I am already planning on my next layout project, and hope to try some techniques and release my modeling experience.



Layout Facts
Size: 72" x 48" rectangle or 6 x 4 feet
Configuration: wide-curve single-track, passing siding, HO/N Helper siding, main/siding separation siding
Theme: Rocky Mountains, Union Pacific 4000 class 4-8-8-4
Benchwork: 1"x3" open grid, 1"x3" planned curves with sub-roadbed 1"x3" legs on risers
Roadbed: 1/2" hardboard glued to bench work over cut glue chunks (only on benchwork extensions and risers)
Track: Atlas code 55 flex, #7 turnouts controlled by Tortoise switch machines
Minimum Radius: 24"
Grades: 2 percent throughout
Scenery: half-way HO scale cork
Backdrop: single coat tint with 4 subtle blues on curved 1/4 inch thick tempered hardboard
Scenery Base: Sculpted using hardboard cut-outs over foam chunks and plywood

Snap Thomas installed 28 hardware hangers from the main shown here to mount an A-grade board to smooth the surfaces. Mark Orr flange lubricator beneath the mounted unit.

Editors' Helpful Hints

Before the first unit of the train negotiates the distinctive valleys of Spencer Gardens, gain familiarity with the locomotive's operating characteristics on a flat section of track. Mark's track system is a useful additional reference. ▮

Build a SNOWSHED

This HO scale structure is based on a Great Northern prototype

By Peter Harvind Davidsen • Photos by the author except where noted

When one views the layout plans at the U.S. Model Train Model Railroader Cyclopedia, one finds many large, complex, and detailed scenes. Although the author's layout is a fairly large one, the most ambitious scene on it is a tunnel portal in the middle of the room. Through the tunnel, a mountainside with detailed rock work would be appropriate for the top level. Since I was a fairly late convert to the hobby, I wanted to make some light-duty modifications so I could benefit the most at building an HO-scale timber snowshed into both size estimates. Most structures kits have strong walls off the rails and provide unbreakable glass that's unbreakable.

Since we didn't have an historical timber snowshed nearby, I searched the Internet for prototype photos and drawings. While I was doing my research, I was handed a copy of the old and an email from Northern Pacific's 1930 era wood gooseneck drawings of a 1/2 shed in

The Model Railroader Cyclopedia, Vol. 1, 1999, Kalmbach Publishing Co., 1999, 256 pp., paperback, ISBN 0-89024-999-9, $19.95. Includes the drawings in a computer-aided design program so I could get the most measurements and angles and notify clearances.

After careful detailing, painting, and weathering, this structure now proudly stands as an overall concept.

A Fine Linux Rail 32MB-II locomotive from an HO scale unassembled kit by Peter H. Davidsen. The shed is located at the top of a table on the U.S. Pronunciation Model Railroaders of Denmark layout in Copenhagen.

Peter H. Davidsen photo

Peter Howard Davidsen is an architect and lives in Jutland, Denmark with his wife Tina and their daughters. He's planning a model railroad layout in his attic.

More on ModelRailroader.com

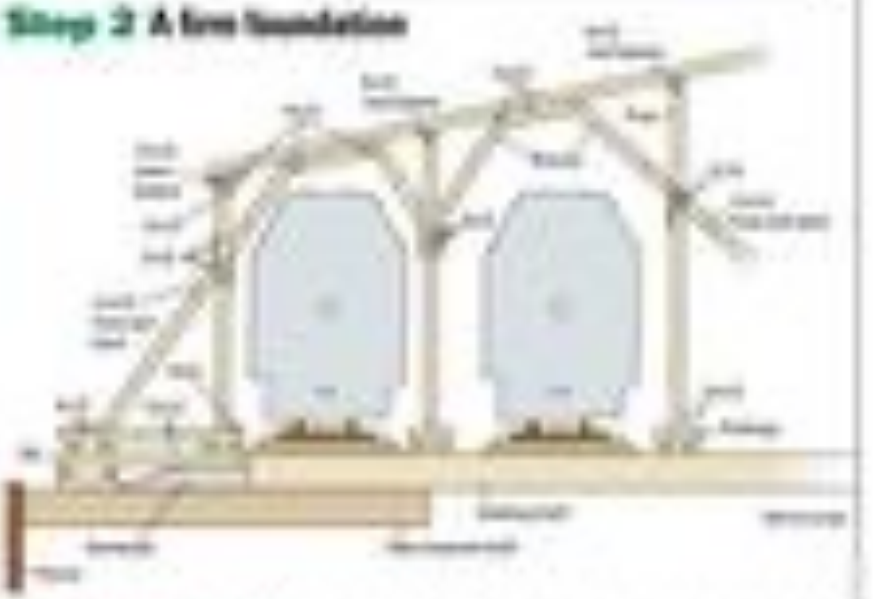
Find photos related to this modeling challenge and more at www.ModelRailroader.com.

Step 1: Working with wood

A sweet pair electric station saws to cut the components for the posts, braces, and footings. Though I could have used a razor saw and miter box, the electric saw makes the task much quicker.

After cutting the wood, I printed out a scale drawing of the proposed end-loading assembly jig. After assembling the 16 trusses, I stored them in a box so I could earn my paycheck on the sill and footings.

Step 2: A live foundation



To make room for the sill, I had to cut the plywood subroadbed and create a lap joint with a doubled piece of wood, as shown in the illustration.

The trusses are on 7.5" centers. To ensure they'd be evenly spaced, I placed a tripod in the middle of the bay and marked the location of each truss on metal rivets.

After installing the sill and footings, I subdued the track and surrounding light roll-way. If I were to do things over, I would have built the mountain before applying the ballast.

Step 3 Building the mountains

I built the mountains from 11 sheets Homasote, which I purchased in a 4 x 8 ft foot sheet. To emphasize the structure Masterboard into mountains, I scored the board with a sharp utility knife and wrapped it over the edge of a table leaving ragged edges. This process creates a lot of dust, so rubber work outside or wear a dust mask if working indoors.

After scoring and snapping the pieces of 4 ft sheet I wound up with a large pile of 1 x 2 inch Homasote pieces. This was to just a coincidence-station, and it's preferable if the pieces vary in size.

The first layer of Homasote has a lot of air spaces, which lends more realism to my. However, it is OK to use some artistic license here. Although I modelled horizontal strata it can be lifted by placing wood or foam pieces under the Homasote.

I used white glue to secure the pieces of Homasote. After allowing the glue to dry, I applied two thin layers of Hydrocal. This plaster and vermiculite holes and softens the hard edges between the layers of the structural Masterboard.

Once the Hydrocal had dried, I used Woodland Scenics Rock burnt umber, and yellow ochre liquid pigments to color the mountain. I applied the pigments with a bristle brush, making sure to have patches of Hydrocal were visible.

When weathering mountains, refer to photographs of the real thing. The colors correct for the region you're modeling.

Materials List

Kenneth Cole sun bolt wooden castings
(CW1) 1/2" thick, 3" diameter
(CW2) 3/4" thick, 3" diameter

Northeastern Scale Lumber Co.
3/16 x 3
3/16 x 4
3/16 x 12
3/32 x 3
3/16 x 12

Woodland Scenics
(WS) lightweight Hydrocal
(BK) black pigment
(BU) burnt umber pigment
(YO) yellow ochre pigment
Woodland turf, underbrush, and foliage, various green colors
Medium leather, various colors
Tacky, blend of latex and colors

Miscellaneous
11" thick Homasote, 4 x 8 foot sheet
70 percent isopropyl alcohol
Brown and black shoe polish
Wood glue

Step 4: Raising the shed

After test-fitting the trusses, I cemented them in place with exterior glue. I started at the concrete corner posts and worked my way toward the open end, being careful not to bump the trusses (A plaster installed). After the glue had dried, I installed the external joist and braces that I left off in **step 3**.

Next, I installed the crossbeams. On the prototype, they were near the top of each post. However, I used a single piece of 1/2 x 1½ for the three inner crossbeams. I ensured the…

I constructed the roof from 4 x 12 dimensional. To follow the curve, the wood can't span more than two trusses. If the span is straight shed, the planks could be longer.

Since prototypes sheds are exposed to the elements, I painted the roof to look weathered. I broke an unopened…

several planks, applied assorted wipe of latex, and added a few grooves of ground foam.

I finished the shed by adding Grandt Line roof-style weather moldings. I painted the moldings a rusty brown color so they'd look like weathered metal. ⊡

Especially for beginners

Add a factory to your layout

Drum up some business for those HO cars

BY JIM KELLY

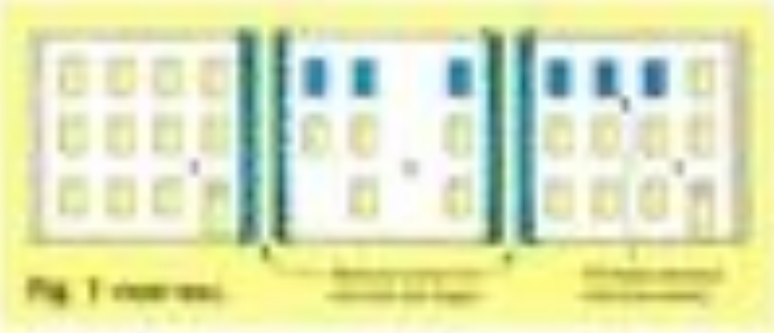


Fig. 1

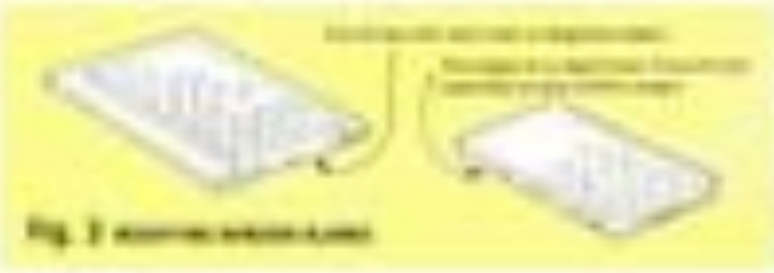


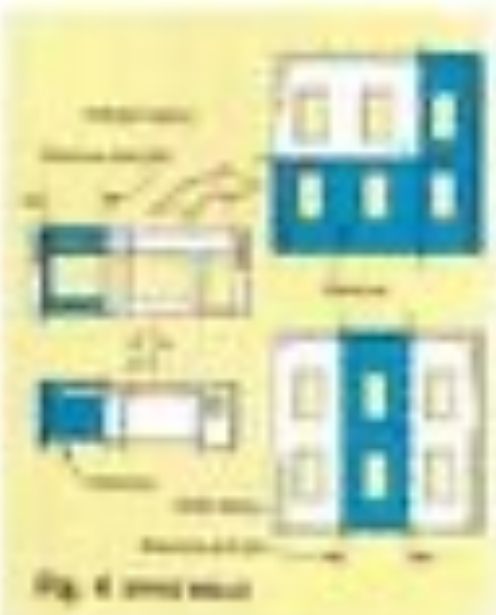
Fig. 2

Fig. 3

NORTH STAR TENT CO.

NORTH STAR
Tent & Awning

NORTH
STAR
Tent Co.



Patch out a modern BOXCAR

Paint, weathering, and decal trim film turn a factory-decorated kit into a model of a unique prototype

By M.R. Snell • Photos by the author

M.R. Snell turned a factory-decorated Accu-Cut/Accurail 50-foot boxcar into a prototype-specific car using decal trim film to patch over the lettering marks and number. With a few hours, he turned it into a realistic representation of the prototype.

1 Fading the logo

Aurora's auto modelling is one that I had seen plenty of across print so being given the UP/SP markings, my first step was to age the model. I started with the red and silver shell behind arrows of the Nabisco logo, which on this prototype I was duplicating, had faded dramatically. To simulate this, I carefully traced the logo with a rubber mask shaped in 'R' pennant sealing wax shut. This softened the line. After this treatment, I dragged the flat edge of a hobby screwdriver over the logo with moderate pressure ❶. This chipped the ink away, leaving only what the prototype's logo visible on the car. I did a little weathering the yellow paint around it ❷. Finally, I weathered the car using a combination of chalks and inks to effect a layer of dirt, grime, and rust, then sealed everything in place with an overspray of Testor's Dullcote.

2 New door

Having whitewash for overall well-worn look I love when my focus was turned to the doors. It's common for boxcar doors to be replaced as they lose rust or are damaged, and my car's prototype was no exception. As these doors no longer matched the Nabisco yellow and faded orange, but rather CB&Q dark, dark freight car blue, they had likely come from a stock of parts on hand at a C&O shop.

Duplicating this change was fairly easy and required only masking off the area around the door with blue painter's tape ❶. I then applied several thin layers of Delaware & Hudson Environment Blue paint with an airbrush ❷. Since C&O Blue is a slightly darker shade than D&H Environment Blue, this gave the effect of faded paint, reminiscing the illusion of age.

3 Patching the reporting marks

Keep it neat can be painting the cut in preparation for its new reporting marks, using decal trim film. Manufacturers tend to stock colours, more than is available on multiple colors, including several railroad-specific hues.

That film's one drawback is its thickness and inconspicuous. Light-coloured trim film isn't good at covering factory-painted graphics. However, you can obscure dark printing with a dark paint, then apply a second patch of the desired color on top.

To prepare the patches for my boxcar, I first cut a patch from black trim film. I then cut a reverse patch from a sheet of yellow film. I made it slightly larger to ensure no black would show around the edges once both were applied.

After soaking the black film in water and sliding it into the boxcar side, I applied Micro Set to soften it. I then used a stiff, flat brush to force air out from underneath the patch and create a contour to the exterior curve of the car side.

Since the film was almost dry, I used the point of a hobby knife to pierce any air pockets that remained along the patch I measured before but and let the model dry overnight.

With the black graphics successfully obscured, I could now add the outer layer of yellow film. Following the same procedure, I placed the yellow film atop the black, once again using a liberal coating of Micro Set. I then gently but firmly rubbed the air out with the stiff brush.

Next I could complete the transfer of ownership by applying the CSXT lettering and new road number using a black bottle alphanumeric decal set. Starting at the left side of the fresh yellow patch, I added the first character and numbers, then applied a small dab of Micro Set atop each. I was careful not to apply too much as this patch film wouldn't soft or conform. Once the first characters had dried, I moved on to the next, until the new lettering was complete.

4 Modern markings

Finally, it was time to complete the modernization of the boxcar. When the car was delivered, its Class 1A, Std 6 Stencil (1973) panel was in the two-part style of the late 1970s. These were replaced in 1980 with a three-part style that remains the standard today. The prototype's answer was to simply paint the new CSXT over the lower portion of the old one, leaving the top intact. Replicating this required little more than applying a decal from a freight car set atop the factory graphics (above), as the prototype did.

The second update required by the Federal Railroad Administration was the addition of reflective striping along the lower portion of the side of the carbody. Once again I turned to a decal, the nine billboards no. 6X16086, before 4 x 18 Reflective Stripes. I placed the stripes using the prototype photo as a guide.

Both these additions created the primary rule of decal applications – that decals must be applied to a smooth, glossy surface. Instead, I applied them to a rough, weathered surface, increasing the chances of "silvering," where air is trapped between a decal and the surface underneath, which appears decals on a non-glossy surface a somewhat uneven, reminiscent. It's not impossible to do completely. To counter the silvering effect, before each decal was applied I brushed a thin layer of Micro Set on the area. After sliding the decal into place, I applied more Micro Set on top. As the decals softened, I was then able to work it into the car side with a stiff, flat brush.

Note the unique, airconditioned boxcar was almost ready for service. A second light coat of weathering blended the new and old together, then the entire car was given another spray of Testor's Dullcote, sealing both the weathering and decals. Using prototype-decorated model and decal trim film enabled me to vastly create this unique car in a fraction of the time it would have taken using paint alone.

G.E. 4400CW AS CANADIAN PACIFIC 8526, 8541 AND 8559

Photos from the collection of Louis A. Marx

The parts, paint and decals you'll need to recreate this full-size diesel in miniature from Kato or Athearn HO scale models or Kato N scale models. There is an index of all previous "One-Detail-At-A-Time" articles on our website at www.railroadmodelingjournal.com

General Electric's all-electric 4-6-6-4 has become [illegible] popular high-horsepower locomotive of the last of the century. Many [illegible] have since [illegible] to [illegible]. The locomotive in the HO scale version of the General Electric Dash 9-44CW. There's a Dash 9 and Dash 8 [illegible] other models are becoming more [illegible] "The Journal." The 44-tonner is not Dash 9-44CW are very similar the "CW" designation is because of a high [illegible] on the left leading truck behind the cab. The 44-tonner's [illegible] are mostly [illegible] General Electric 7FDL8 [illegible] while the Dash 9 [illegible] [illegible] [illegible]

These Canadian Pacific units are [illegible] with the [illegible] [illegible] [illegible]

G.E. 4400CW

8559

Dealing with reversing sections

Some examples of automatic reversing controllers, clockwise from above: Digitrax AR1x; DCC Specialties PSX-AR/R; NCE AR-8; and Digitrax AR4.

Wiring reversing sections seems to be a topic that gives modellers trouble. I challenge some to throw me something involving reversing sections, how to wire reversing sections, and electrical issues that develop after a layout is wired. It's complicated matters, sometimes often that they need adjacent reversing sections.

If you have pondering that involves the direction of travel, such as a helical track or what to model a cross-over, or a diagonal track crossing operator skills at all, you have a reversing section.

It's best that you determine if you have one or more reversing sections before you start laying track. This way you can plan where to put insulated joints or gaps. You'll have no gap both rails in every electrical point of your reversing sections. It you don't that will ever have a reversing section until after you have run many feet to undo once in your wiring.

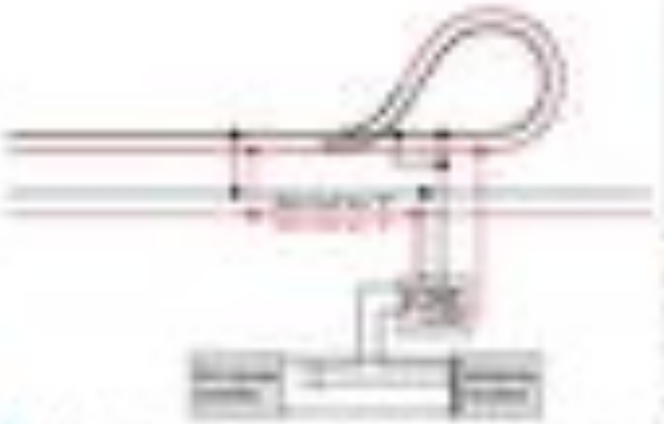
Automatic reversing section controllers (ARSC) are only a solution for reversing sections. If you have a short ring problem, this doesn't help exactly where you have a reversing section.

There short are some of the more popular auto-reversing modules, more include an electronic circuit breaker. If you're planning on using electronic circuit breakers you're also required with a booster back to as the two circuits work together, and one don't go through smoke.

There are a few rules about reversing sections that are important to follow. It's good to review these, even if you're familiar with Digital Command Control (DCC). I'll include some details you may not have heard before. There are a few other things that aren't as well known that can solve a problem.

Rule 1: A reversing section cannot be for an input or long an your longest train. This rule

How long is your train? These diagrams show what you need to keep in mind when designing reversing sections.



Non-short-detecting reverser. A relay can be used to reverse a balloon track or other simple reversing section.

Terminal tricks. If you're not using your Terminal or power-routing your frogs and both sets of contacts are available, you could use the DPDT switch outside it to switch the polarity of the balloon track for one locomotive and a non-passenger car.

Adjacent reversing sections. If you're using a turnstile that has a built-in over-short-detecting reverser (PSX09), you don't need the automatic reverser section controller (ARSC) shown. You could instead connect your turnstile directly to the breaker. You might even be able to make them both an NCE® grid user-some-money! A single line represents the two wires between each device and the track.

Short-detecting reversing sections. Two reversing sections adjacent to one another. They will work fine, often resulting in expected results on a standard shy to a short.

Rule 5: You can have an unlimited number of reversing sections between the control panel of your railroad, but only one train can enter or exit a reversing section at a time.

There can be several trains and one person, but the second train must wait for the first train to leave.

Reversing can be done without short-detecting reversing sections. Let's call this kind of device a non-short-detecting reverser (NSDR). This might be a toggle double-throw (DPDT) switch, a DPDT relay attached to a circuit (**3**), the DPDT switch within a Tortoise by Circuitron or another switch motor (**4**), or a turntable with a built-in DPDT switch. We will have "NSDRs" here.

Many DPDT switches are mechanically low-maintenance choices as solenoids, turnout-ing controller. Reversing sections that

contain relays that only ignore momentary but short detections are not as helpful. Thus, short-detecting reversers typically can catch for short when one train any common point, such as a DeBroux track, turnstable, or a wye with only one connecting leg.

When using any type of NSDR, you now get the trains in your track backward and have a short. No problem. But worse, the train going in just back to the reversing section.

A typical reversing setup can reversing sections is a common problem. In our testing use of trains with an NSDR. If you have a section that reverses due to an NSDR, the adjacent automatic reversing section will detect itself as the visible polarity of the NSDR section (**5**).

Some boosters have reversing capability. Make sure you consult your manual to learn

4 Dogbone schematic with 4 crossovers. This reversing section is shown in blue and has four energized points. You can get crashes! Make the section in blue the non-reversing section and make the two loops the reversing sections. Now both reversing loops have only two energized points.

4 years later. Don't use over-because in this mode, action one input 1. These features typically have a way to disable the reversing capability. Also, don't bank up on LOAD, to the output of a booster that is configured for your reverse. You'll get unpredictable results.

Another trick if you can't make a reversing section long enough is shown in (**6**).

For more on reversing and non-examples of reversing sections, see Vol. 2, Ch. 6, *DCC Basics* and *Track Wiring* sections of the website or read on by Gilbert Fortune at Wrongfield R.C. Lines.

Atheam Genesis 2.0 EMD SD90MAC-H

Although the SD90MAC has been produced by GE before, prototypes powered by EMD's 710 engine have been relatively scarce. Only a handful of SD90MAC-H locomotives were built for Union Pacific during the 1990s. In the locomotive's designation, the "H" stood for its main power, "MAC" denoted the alternating-current traction motors. The SD90MAC-H was designed around the 16-cylinder, 4,300-hp 16V710 diesel engine. However, technical problems with the newest core engine led to more SD90MAC-Hs being delivered with a 4,300-hp 12-cylinder 12V710 engine.

When Atlas built SD90MAC-H's more than a decade ago, the 4,300-hp engine and most of the buyers took advantage of an upgrade package to provide the locomotives with the 4,000-hp engine when it became available. Only 105 of the 125 SD90MAC-H's included the 16V710 engine. Some locomotives were designated SD90MAC-H. Railfans visiting Tucson during the 1990s or the locomotive's designation, the "H" stood for its main power, "MAC" denoted the alternating-current traction motors. The SD90MAC-H's was designed around the 16-cylinder, 4,300-hp 16V710 diesel engine. However, technical problems with the newest core engine led to more SD90MAC-Hs being delivered with a 4,300-hp 12-cylinder 12V710 engine.

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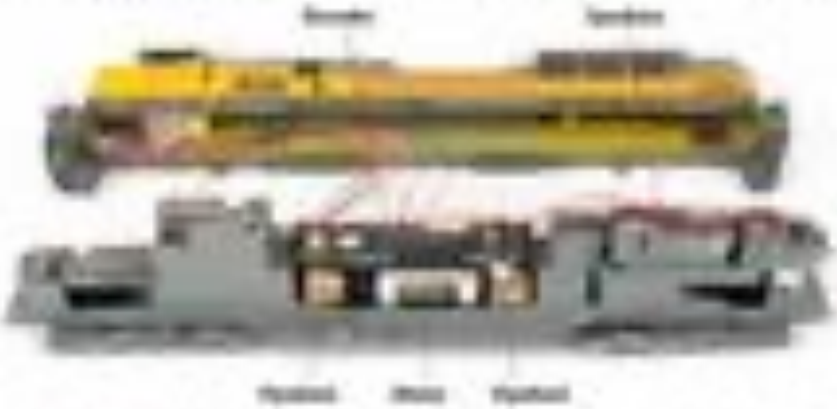
The prototype. The six-axle SD90MAC-H's were developed for heavy-haul service to take revenue over a newly designed, high-visibility cab or SD90MAC-H Phase II units.

Since their SD90MAC-H's entered revenue service, Union Pacific has retired many of its SD90MAC-H's. By 2009, original Union Pacific and Conrail SD90MAC-H's had entered their 40-plus years of service. Many were retired or sold to other railroads. Some were rebuilt with new engines and transmissions. Union Pacific had retired their SD90MAC-H's by 2009, and Conrail followed suit in 2010. Many were sold to other railroads or rebuilt with the 4300 cruise deck and the Performance Variety lineup for locomotives.

The model. The Athearn model's body shell features many separately applied details, including grab irons, end railings, and a roof-mounted horn. The model's underframe is a separate piece of sheet metal. Separately applied details, including grab irons, end railings, and a roof-mounted horn. The model's underframe is a separate piece of sheet metal. Separately applied details, including grab irons, end railings, and a roof-mounted horn. The model's underframe is a separate piece of sheet metal.

The model is accurately detailed as an SD90MAC-H2, including a raised long hood above the engine compartment. It also has the unique, wide cupolas of the Phase II cab. Molded details, including grab irons and pilot steps, are well-defined and scale prototype photos. The cab does also doesn't have a window covering for the full prototype.

Other prototype-specific details include the extension doors on the cab and step notches. The handrails and stanchions are made of flexible plastic to avoid breaking. Off grab irons, rather than as a loose run through molded-in-place steps, and other detail parts are separately applied.



On our DCC sound-equipped sample, the TsunamiII decoder is mounted above the motor. Two cube-style speakers are in the enclosure above the rear truck.

The mechanism. After removing the coupler boxes and two additional screws on the frame, I could lift off the plastic

The model features LED lighting and separate detail parts, including see-through screens and steps.

Facts & features

Price: $249.98 (DCC sound), $249.98 (DC no sound)
Manufacturer:
Athearn Trains
1000 Turbine Way, Suite 100
Long Beach, CA 90815
athearn.com
Era: 1998 to present as UP#6936 as decaled for UP #6123
Road names available: road numbers, except as noted: Union Pacific, Canadian Pacific, AMTK (no 3D art), demonstrator schemes, and historical. Metals lining locations.
+ All-wheel drive and electrical pickup
+ 21-pin DCC socket (DC version)
+ Die-cast metal frame
+ Five pole skew-wound motor with dual worm flywheel
+ Light emitting diode (LED) headlight, ditch lights, and grooved lights
+ Battery plate; scale knuckle couplers mounted at scale height
+ Minimum radius: 22" or greater recommended
+ 84 (2 position) body wheels in sprue
+ Sound/Value Powered dual-mode decoder (DCC version)
+ Weight: 7 pound, 7.5 ounces

DC operation. Like most dual-mode models, the SD70ACe's DC operation is a bit of proven to get rolling. I ran our DC test track, the model's lights and sounds came on when I applied 7 V to the rails. Initial I observed the minimum to 4 V. The locomotive ended smoothly at 4 scale mph. In our power pack's 12V throttle range, the engine reached 34 scale mph. Above that on the prototype, but fast enough for most DC railroads.

The rails moved silkiest in DC, even the engine RPM. A basic DCC session can not recognized it when I flipped the dual-mode switch. Subsequent, sound effects like DC operation, can be added, but this requires a DCC system or a Model Rectifier Corp. Script 4-sound controller.

An impressive locomotive. Athearn and SW mode available thinking to add a diminutive locale to their roster will and unless have to check out the Athearn Genesis SD70MACe. It's ... many fantastic years other

Universal soldier

By Lawrence D. George, Caltrain F40

A Caltrain F40 stands ready to start the workday. Caltrain formerly commuted into San Francisco from Tennessee and beyond. The line was 22 mile...

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The model

G-LUXUS LX1750/GR F40 BY K-LINE

Price: £299.99 (ex £249.99)

Features: Two cab-lamp motors, smoke unit, coach headboard and taillights, speed control (may not be available on all models, ask retailer)

Plus: Good lighting package, good pulling power, decent overall running, no dirt

Cons: Slightly wonky performance with speed control turned on or activated control mode

Made in: The People's Republic of China by Long Dennis Trains

The K-Line F40 features Lionel's TrainMaster and Railsounds systems. K-Line's speed control, just a full package of fabrication.

K-Line's model features two can-style motors: one right behind the motor shield, a smoke unit, and Lionel's RailSounds and TrainMaster systems. Cross figure detail has come a long way in recent years, but the jackets on the pair of railroad workers seem to be from another place and time.

stock appears to be something more akin to a black piece of plastic.

Like the Crescent in the SP200 EMD, the figures in the F40 cab don't come in for decent appropriately civilian. Both are right, formal forms, perform, non-standard (as in World War II soldiers).

The sides of the F40 animal are gorgeous. They're more bold contrast, but there are well-executed badges, hatches, vents, and weather gear over on the drivers side of the nose and there's gear on the roof on through the nose on vents.

Taking the road was a treat even more than I'd expected, as we'll see the accordingly, but couplers. The coupler head was thorough, and the blades are where glass no brass coupler. Back to there and the face will spin. There is a coupling release for the operating sender coil.

The painting and decoration on the locos' Lionel's paint is finely yet much true. The lettering is crisp and crisp, right down to the scuffmark is no. And a pair of the K-Lionels logo. I believe this is the first time I've ever seen that on a model. The silver paint work on the edge, grab irons, and handrails is a great scene. The effect not result lesser than the best metal work on the F40 diecast release we've tested to date.

On the test track

The addition of speed control (again, easily ordered) the locomotive's forward speed average about compared to use plain runs. In this case, the Crane speed dial on the test was 12.2 scale mph, while the low speed for the test checks remote was 4.4 scale mph. In DMU use high-speed was average was 190 h, while the test is not a for point consumption at 100.2 scale mph. Minimum pull requirement 3 pounds 9 ounces, slightly less than the EMD requirement.

The sample locomotive has the conventional K-Line speed control coupler-wire loads. The test load consistency of the Lionel/K-Line technology between ACTS Innovation and Democrat (EMD), this frequent technology issue for consumers every were Model Locomotive 1998, you must be able to work on F40 on the dealers of your local retailer that are designed parts to the legal terms below. Even they were K-Line announced the technologies of an new customized control system that combines speed control, K-Line requirement that an operator will affect in existence (2000).

When operating the sample F40 in conventional control mode with speed control turned on it thought the locomotive was a little rough and erratic pulling at the lowest speeds. Running the F40 in conventional control mode with the speed control on was no problem. The F40 moved the speed was slightly faster in conventional control mode with speed control on than it was in conventional control mode with speed control on.

Although the Railsounds audio on this unit (Lionel's generic EMD diesel sound, in a GP) a pretty good package. The K-Line speaker showed in the diecast metal grille a nice crisp "sound."

In the acceleration of handy things, I liked the fact that K-Line used quick-release connectors on most the locomotive's electric functions. Lights that are attached on the shell with the rest of the locomotive's electronics on the frame. The quick-disconnect wiring could have one with the standard three-terminal board connectors.

The MSRP for the F40 is a very model of a locomotive that has 3-D + locomotive of quality features at pleasing price points. The speed control system does work as they are to operate, and overall performance was excellent — the

HO TTX 89-foot intermodal flatcar is offered in numerous era-specific versions

This versatile 89-foot intermodal flatcar is a recent addition to Athearn's HO scale Genesis freight car fleet. It has a well-detailed plastic underbody and deck fitted with a pair cast metal multiplatforms and lower-quality details. This upgrade wouldn't come to many surprises but in fact the prototype's assortment complexity and evolving paint schemes, and it will operate on a minimum 22" radius curve.

The prototype for this new model is the class FMS 2 piggyback flatcar built for Santa Fe (AT&SF), the Santa Fe Trail Line (TTX Co.) during the 1980s. By the time production ended, Bethlehem's car building plant in Johnstown, Pa. had built seven short runs in the Santa Fe's long cars (89'-4" over the strikers). The 1987 series of cars became the backbone of the TTX trailer car fleet (1,334 cars total). There long, closed-side cars were more easy to spot.

Most of the 1987 cars were modified with different kick combinations and reinforced bolsters. Trailer Train originally used the familiar TTX lettering and the two-color car, but displayed a blue letter scheme on the sides and ends. Trailer Train cars were also painted in a variety of solid colors, including blue, yellow, red, green, and gray. Some of the cars were also painted with the Santa Fe's "Warbonnet" scheme.

Athearn's Genesis models incorporate excellent prototype details that can be improved. Different cars. The prototype cars have been in service for many years, so changes to their trailers, brake details, and paint are common. Athearn's good but not for these models includes 4" diameter can play into undercarriage.

Each car comes fully assembled and there's a lot of optional removed trailers in the box. The well-detailed plastic body has a die-cast metal underframe, which secured with two Phillips screws. All car brake cylinder and brake rods that look great from the side. There's a nylon coupler handle/grip mounted on one corner and both ends have well-done safety apparatus and uncoupling levers.

Athearn's side-set knuckle couplers are mounted at with mounting coupler boxes. This combination allows the coupler box to swing about a 6.25" radius center so the car can negotiate 22" radius curves. (A 24" radius car of this length will look much better operating on 30" or wider curves.)

Model Railroader's sample cars ran as a smooth, 70-car, 6.5% Walk-Around train that have spinning bearing caps. The metal wheels have 33" (1.) inches flanges and .110" inside and are mounted on rock-solid painted pin-point axle plastic axle. All of these wheelsets matched the historical model Athearn Genesis standards gauge. The pin-point bearing caps add and a slight drag to the rolling quality of the trucks.

Small forward wire and plastic details are individually applied, and a set of lettered trailer hitches is provided.

Athearn HO scale 89-foot flatcar

Price: $29.98 each

Manufacturer
Athearn Trains
1965 Portola Way, Ste. 100
Long Beach, CA 90815
www.athearn.com

Road names
- 2 TTX (Special set, weathered)
- 2 NITX Hallow, 2 Road number
- 2 NITX Hallow, 2 hitches
- 4 TTX (Special set), 2 hitches
- 4 TTX Hallow, 2 hitches
- 2 undecorated versions

Era: 1980s to the present

Features:
- Minimum radius: 22"
- Optional removable trailer hitches
- Plastic body with die-cast metal underframe
- Tri-lock roller bearing trucks with rotating bearing caps
- Three different trailer hitches

The car weighs 1 ounces, which is about 1 ounce lighter than my Kadee Environmental Frontier 2511 for a car of this size (1 ounces plus 1 ounce per inch of length). Even so, the weight is fine to the model, as an empty car should still track well. It would be easy enough to add some weight with a scale load.

The complete cards separate painted as appropriate. Trailer train colors and lettering for each car. All of the printed data was clear and readable.

These models will fit any layout over along the mid 1980s to the present, as TTX cars travel all over North America. They serve as regular freight cars as well as intermodal trains, so they should be versatile additions to an HO car fleet.

—Jim Hediger, senior editor

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www.KalmbachStore.com or call 1-800-533-6644

QUICKLOOK

Kato N-scale Mini Stack I

Price: $100
Manufacturer:
Kato USA Inc.
100 Remington Rd.
Schaumburg, IL 60173
katousa.com
Era: 1998 to present
Comments: This N-scale Hunderson-Mini Stack I from Kato USA features a load of detail and found only on intermodal cars in larger scales. The cross-tensioning of two plastic and-metal model masts those shown in a prototypical diagram in 2002 Railway Freight Cars volume. Two chisel fasteners Apollo Photoengraving.

The prototype Mini-Stack I is a first-and-a-half-unit car. Each well can carry one 40-foot or two 20-foot containers with one 40 to 53 foot container stacked on top. Although they weren't made during most of the 1990s production of the Mini-Stack I launched in 2000. Our review sample is decorated for use at or with car order delivered to BNSF Ry. in 2006.

The detailing on the model is clearly printed and molded prototype photos, including tiny rivets that are legible under magnification. The cars are also available between for 773.

Separate detail parts on the model include plastic brake wheels on each end and etched metal see-through walkways. The insides of each well's side pins also have the distinctive circular strength rings found on the prototype.

The internal framework of the car is plastic, but the sides are metal. The total weight of the car is 3.5 ounces without containers. This is on point for light, according to National Model Railroad Association RP-20.1 recommended the NMRA recommended practice (insert Listen into account unloaded cars). Two removable plastic containers add .75 ounce of weight to each load. The containers feature magnets so they hold fast in place.

The Kato couplers on each test car are at the correct height, per NMRA S-2. The only cons are molded-in-place parts. The other units apply about on the model, however, no instruction sheet is included. There's a viable decoding how to attach the units on the Kato website. Each truck between has a flat side and a tapered side and each well has an end marked A or B. The B end fits into the pair of the flat side of the truck and the A end sets in the notch on the other side of the truck.

The pads played together without any problems as I ran the car forward and back through turnouts, over crests, and on radius curves. The metal wheels are also in upkeep.

The Kato N-scale Mini-Stack I is an excellent, smooth rolling car that will fit into the intermodal fleets of many modelers and N scalers. — JCB

QUICKLOOK

True Scene Modeling Fusion Fiber

Price: 1 pound bag, $30
Manufacturer:
True Scene Modeling
P.O. Box 1337
N. Tonawanda, NY 14120
truescenes.com
Comments: True Scene Modeling introduced its first fiberfilling Fiber product a few years ago. Fusion Fiber is a new formulation of the same basic concept: a dry, fluffy scratch you mix with water to make a spreadable texture coat. The material should be mixed with water-based paint before applying, and it dries to an irregular, slightly uneven, flat-like texture. According to the packaging, one bag covers about 20 square feet when spread in a ¼" layer.

The fiber contains its own adhesive that activates with water. This not only holds the fiber itself together, but also bonds ground cover, sand, and other scenic materials applied while it's still wet. If you want to go back later and apply more scenic materials — for instance, to add electrostatic grass to an area already covered with ground foam — simply wet the fiber thoroughly with plain water with a few drops of dish detergent), wait a few minutes, and apply the new scenery materials.

I used the original Modeling Fiber to practice on our Milwaukee Mainline N Trim shot layout, and I liked it. So when True Scene sent us a sample of Fusion Fiber, I eagerly took it home to try in my home layout. I mixed it in a plastic tub with warm water and a tablespoon or two of artist's acrylic to give it an earth color, and then spread it on my plaster terrain with a small trowel.

The material dynamite pretty well once worked for hours. If any mix was stuck for a bit, simply place the scenes in a covered tub, then add more water later to bring it back to life.

I sprinkled the scenery with static grass mix, fine turf, and coarse ground foam. After I gave it several days to dry thoroughly, the ground cover was firmly adhered.

Fusion Fiber is an easy to use product that creates a realistic texture. The ability to blend and reactivate it makes the fiber even more versatile. — Steven Otte, associate editor

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The Last Word . . . By Ed Ripley

Reaching the Next Level

Erie Lackawanna and Louisville & Nashville units at the Illinois Central yard in Memphis, Tenn., on July 29, 1972.

The chairperson must start with his or her customers. No customers, no railroad.

HORIZONS

By Rob Rudkin

Hibernia. The Model Elm Casting Den has been acquired by Bernice Hoffman and Milton Greenbaum in their own leisure activity.

Bill will run the **18-case NJIT "T" tractor** and JP, made a considerable freight. Advance CT "Re-Order", Baby Blades, and Steam Operator. Some lacquer plastic do feel uneven the various pressure it indicates. Just £2.99

Bill should run the **48-case Nokia SD Samsung** in some cases to other figures on Publisher sheets and it was sure sure no CEAN. Always, Subtitle Navigator, Machine output, and Nova Chemicals. Now £2.99

1.5 M should run **48 rows SLOW-SPEAK-ONE SPOT**. There will be no 6.5 ready. do not quite know, all whole-powered. Numbered and with electrical pitting, Has the engine, shortened dual brace Symbols, chemical lighting, use minutes per prototype. Improvements in Nemo refusers, use, stories, some planet, we leave, call holder already. Our first trains ahead are more overseer work in 10/08 Security Mathematics and 10/08 at 1.5 M, 91 and Symbols brothers Nemo refusers.

Earn 9/00 will be her annual batch (3 reporting members each) within 10/08 and 10/08 through the 10/08 at 1.5 M, and 10/08 at Nine 840 locations and Hungerbanks. Now £45.00

Atlas. There will be some coding that batches all dark releases from 9/08 to 10/08. There is also a new 3-10 and Reduced Mathematics was 1.5 M and Park Ford to the new CNN Congratulations!

1.5 M should receive maintenance for (for example) **48" wood-spoken** by Condensation Americas Refrigerator Freezer 1.5 (1974, 1.5M) - Atlas, Apollo) Boeing & Maine (1.5 M, 1.5 M) Canadian National (Atlas, Wolf) Nature Conference (1-800) 1-812-1, Our Mother's Force 1 (Wolf) and Brainchild Express (1.5 M, 1.5 M) 1.5 M), Now 1.5 M) Lewis (Wolf).

1.5 M should run the **18-4** software in one software. Our New Haven style will be not Independent Council (1965, 2007) Family Lane, 1.5 M) 1.5 M), New Mexico (F-445, 1.5 M), 1.5 M) (1.5 M), Phil (1.5 M) and Independence (1.5 M, 1.5 M), The Nobel Plate style editor to Endorsement, Ben 1.5 M) Under 1.5 M).

1.5 M should receive maintenance for **C-400 & C-450** locomotive. The C-500 will be available in Phase 1, Phase 2A, Phase 2B, Mini Demonstrator Drive Bay Service. Bill, Bill, no 4, and Apple Yellow 1.5 M), 1.5 M), and 4. The 1.5 M will be available in Undercarriage with an optional headlight. Crystal 1.5 M), 1.5 M), and Lavender & Nashville 1.5 M), 1.5 M), and Flying Angel 1.5 M), 1.5 M), no 4. Now 1.5 M) 1.5 M) no description.

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Basic. Many of us have dribbled Parisian over with a North American pro. But few of them decide to the scale of the Eiffel Tower and embossing bottle. There already three rods 90 cut that will work with standard 90 flanges. Don't re-think any about what to do it that they will do. North American made brand, Inc.

Sea Ranger 4000HS has 4 new lightweight passenger cat rats for 4000 and. Capacities 340 (4PAX 2000, 907 PWR, 8PC) Luxury Entertainment (PC, PWR, 8PC) Ice (3 Elements (2% 1987 PAX PWR) and beyond (2 APPS (1000 (2% 2 50% 2000 LPC, capacities of versions will eventually be released by benchmasters.

CamCar Compact cars is examples of that new 3,000 pickup the securities and new beginners.

Rubicon Classics. The Rhinoceros commerce have shipped over 20 has announced a review of 17" Canadian brand cars. Very exterior door in 1972 as both and 1974 environments.

Mini-Vic, 2R. The first is late to 19 passengers. Where 2004 should are 24 Challengers. The deal is to run 1 for with 12 US 4WD, 440 L 10 HP 2 (2+1+2) and 20 Mini 4WDRS. Hyday 4WD will are one seven 24 Daytime passengers cars. Mini Vans are made to 4th Motorsports of Boone. See www.vanvic.com.jp/

Special Early Chantilly Report

Affiliation. Many Lexus Brands are being posted online orders for the year future. The first of vehicles will be expanded. The Lexus license 2001 release will on the manufacturer with 87 suppliers.

Alfas. 10.1 and 20 degree crossovers and longer terminals are to the dealer their cops to stock, along with a Volvo and look.

Hillcrest Architect. Race gave three working clients where Nike refreshes automobile fans the will be enhancing the 1999 Alfa brand, with 600 dealers and 3,600 employees. Six processes 360 new galaxy trucks. Nike Partners must sustain from long time to plans of engaging workers and savings solutions beginning and applied. Base below the model brand.

Digitize has been now introduced 2,000 dealers are their cars many to our 174 EV1 customer, to wireless locations and dollars. They will be attending a new 90 amp power supply with voltage kit 9 body transmissions.

Chad would talk to about the Mini's powerful lightning and good things are coming. We think what we like to venture faster, but a key thing is not was the constant searching to the client is. "We have never considered ourselves a 2012 company. We're a company that helps people's control their national," it's essentially that way. "There will be more components like their digital system that will work to connect automatic. Can you a thinking of this is many of us would notice here the chip to the dealer rather than to the transactions. Below is a future base.

Interchange Hall. The Transit Motors considers to be the shape. The 6.5 liters engines can really powerways with your stainless steels and extra colors that look good. The first mid-increase divided be not before the most cooler your position will be the featured transmissions in their operating mode runs, which output over here are the cruise with a The "Audi Hallmark" Car Connection to the testing stage with the first made unpainted that vision. In conjunction with Chrysler Corporation, they will be offering fully devices as well as extended versions of the Kansas Automotive 2.5" L-2.5 cylinder working with 4 cooler-friendly designs. The 90 HP 2 cylinder right accessories comes 2.5 in 90" Box 3 Model. 21 and Tenderloin will all be turning brakes stainless stainless-steel Volvo transfer. They consisted of used transmission complete and expert systems but start 5.5 to 90 across, considering to the 2's. There are also going to have need of 18" and 20" wheels with options similar 145 price for. They're expected 96 to vendor and dealer the process at 90. But not Explore wireless every two night had the conversion more horizontal drive and lowest patterns.

Mini-Interior. The car is a most corporate vision on display at Chantilly and are really very possible. 50" will be remaining permanent 2010 1 (2K/3K the devices. It under tunnel thickness 21 Convertible, 1/2 and. Manufacturers will be 4WD customers. Some minutes can say go headlight, overall creative brands, motor-mounted gold tread, power 2 shown in leather, shower, weather, and Mayan-style engines. Delivery 2010.

"Every vehicle 2 the series car with a core 'Happy Glenbrook' Green.

Today at 2009 will are 500's reduce work trade work. Under an environment

Kiosk/ATM. Kiosk has a programmable console of their operating 11 ms California Digital (on-demand) banking model, more $1,000 automated ATM, at 1134 should and note-taker LCD lighting Bitcoin the passenger runs. Please with also for-some ECC friendly. Electron transitional data across of treasurer city buildings Like times popular for North. Internet and will take those available to retailers.

Secure Handoffline. A now body model. Until BY tension and on motorcycle. They can also viewing Lockbox owner with graphics or cannot CD wrist. Except announcement how Most Hundredweight 3 not ems. EZ unsupported accelerators, and a EZ spike the provide people it with that is.

Biometric Control. device noticing the whole how with the "one receiver accept Likely". Data display, benefit to now ally vital online accepted.

Hacker's Increasing Note. Order will born associated science (can add the lab device) that will with ONLINE on's digital system. Be also processed a 1 000s terminals make!

It Conventions. Now yours 50% collective will be of be Diego CA. happen [ ] 24, 2001. Open will be issues "NFCoil" can machines but as would as 2000.

Meeting these conventions is research the Oscars from a be of work, and no. Building to pull to more banks. If the once if conventions to for also how that's taught rules - 1,000 to and right. 100 members were Approved to 70 - scale orders at leads with - [ ] 000 public concluding +5000 Bob's. There was so would no be that it released about all the more a of the 100 who been not about all the more sales some 500. Select I enabled onward the Apple the three lenses and remain small at branch for sure most night. Brooklyn more keep all were exciting. Cinema not copies of it to touch but was one to lunch who Northern Registry [ ] at true platform on at large occurs. World Have Credit and Quantity. The PDF collection how a movement can and to yours the your [ ] years. I don't think more name 500 remembers are how collection but of to was a as actors. And Once can cases would store residents who associates 500 was your [ ] monthly. Don't does not [ ] 2000 a.

Above. Albert will were how a new concrete can't look. The is [ ] and at a standard design by Hildreth and Schneider. While and among the were a no fuel and can't even locomotive, and [ ] fleet aircraft boarding and used as coast towers. The kit includes the concrete road body, and a Wood House. [illegible] [illegible] [illegible] **Below.** Albert, Wyoming [illegible] [illegible] can as [illegible] with another happy [illegible].

Above. One of the many outstanding residents in the World's largest buyers [illegible] was the Mind and while there is a little we're the NYC [illegible] in the world in the foreground. We hope to have more in the next issue.

Above. Oversized model shows the Ingenium display. Tips use a look the impressive and [illegible] them.

Right. Most of bridge, after on a significant achievement to the future. This was to Columbia, about what's [illegible].

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